

AMERICAN VETERINARY REVIEW

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AMERICAN VETERINARY REVIEW.

FEBRUARY, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, 15th December, 1913.

NERVOUS DISEASES IN DOMESTIC ANIMALS.—Continental veterinary periodicals have recently published valuable observations and articles relating to the pathology of nervous affections in animals. Mentioning only for the present, until further consideration, those of Prof. G. Petit, of Alfort on Poliomyelitis, I will extract to-day from an article translated in the *Revue Generale* from the *Archiv. fur Wissenschaftl. und praktische Tierheilkunde* and which is due to Prof. Sonnenberg, of Greifswald, "on the diseases of the spinal cord in our animals," perhaps principally dogs.

Beginning by some notions upon the structure and functions of the spinal cord and on general and special neurology, Sonnenberg then gives the description of a case of *mematomyelitis* in the region of the medullary cone and of the last sacral roots in a dog. The animal had dropped from the second story of a house, did not show any trouble of motility immediately, but a few moments later his hind quarters refused to work and failed to support him.

The next day the dog was lying down unable to get up. He shows no pain. Held standing, he is supported by the forelegs, but the hind ones only do so for a few moments. He can sit down

on his rump. No abnormal sensibility is observed about the thighs and there is no deformity of the vertebral column.

When pressure is applied over the lumbar region, the dog cries and the pain is stronger if pressure is made, especially on the muscles. The croup and the superior part of the thigh show great sensibility. This however is less on a level with both faces of the thigh, towards the anus and perineum.

The tendinous reflexes are exaggerated. Sonnenberg promotes them as he indicated on previous occasions; the patellar reflex, that of the Tendo Achillis, that of the flexors are obtained in the same way. Same increase of the cutaneous reflex inside and outside and also of the periostic reflex of the dorsal vertebrae.

The whole leg is thrown backwards under the influence of a slight pressure made upon the adductors of the thigh. Percussion of the extensors of the patella throws the leg in forced extension, the thigh of the opposite side makes the same motion. This position is held for a little time. Micturition and defecation take place with very little difficulty.

After five days, the paralysis disappeared and recovery took place rapidly. It was complete a month later.

Sonnenberg attributes the recovery to injections of "lacto solutio," a preparation of an albuminoid substance extracted from milk, which injected sub-cutaneously gives rise to a vasodilatation of the small arteries, specially of the skin, tendons and muscles. Lacto solution is injected in dogs in the doses of 2 c.c., and in horses of 10 c.c.

* * *

Continuing on his subject, Sonnenberg relates a case of *traumatic myelitis of the lumbar region with hematomyelia* in a dog six years old, which became suddenly sick and became paralyzed in a few hours in the hind legs. He was supposed to have received a blow against a door. He had opisthotonos of the neck and poll, being indifferent to all surroundings,

whether when standing or lying. The opisthotonos was not permanent, at times slight, at others quite severe, principally by the slightest touch. There was no motor trouble in the muscles of the poll or of the neck, but only a condition of contraction, marked also about the masseters. The forelegs were readily moved, but the contraction of the extensors more marked than that of the adductors.

The hind quarters were paralyzed. The dog unable to stand up, fell down at every attempt with the hind legs taking any abnormal position, of which the dog seems to take no notice.

Excitation on the extensors, principally round the patella, brought about an extension lasting thirty or sixty seconds. During that condition, it was difficult to bring the leg in relaxation. The patellar reflex persisted on both sides.

Reaction to pain was limited in the hind legs and on the level with the last dorsal vertebrae. Exactly opposite the last there was a zone of hyperesthesia. Urine escapes drop by drop.

Eight days after, opisthotonos had disappeared. The spasmodic paralysis had become permanent. The sensibility returned little by little, the cutaneous and tendinous reflexes returned. At that time "lacto solutio" was injected and recovery occurred by degrees. The dog however died from infection following lesions of long decubitus.

* * *

Two other observations, still more interesting, are then recorded.

Since two months a slut shows trouble in the locomotion of her hind legs, which began during a period of gestation. Over the lumbar region she has a hairless bluish spot, probably some traumatism. But since four weeks, on the back, and specially the rump, all the hairs have fallen without cause to explain it. The animal is lively and acts as a healthy dog. Yet, in walking, the lumbar region moves from side to side, the hind legs flex, there is true ataxy of the left side.

Local examination reveals nothing but exaggerated patellar reflex. Cutaneous sensibility is normal. Injections of "lacto solutio" are prescribed. Improvement takes place and soon the walking of the dog is normal. Fifteen days after, relapse, urination is very frequent, in small quantity and by drops. There is great weakness of the hind quarters. The muscles became atrophied, the reflexes are no longer present. The animal is killed and while there is no anatomical change in the spinal cord, histology revealed a condition of *disseminated myelitis*.

For the other case, it is one of *hematomyelin* of the lumbar region—swelling of the cord. Ten hours before he is seen a dog has been run over, he has been able to make a few steps and then dropped—paralysis. General aspect is good, appetite present, no appearance of pain. When the animal tries to get up, the hind quarters are scarcely raised. Patellar and anal reflexes are present. Percussion of the extensors of the patella produces convulsive contraction of the leg. Sensibility to pain is absent in the hind quarters as far as the last dorsal vertebrae. No zone of hyperesthesias.

Two days after treatment is begun. Patellar reflex is exaggerated, so is the abdominal. About the first lumbar and last dorsal vertebrae a region of hyperesthesia is observed. Sensibility to pain has disappeared. There is retention of urine and constipation. After two months of treatment with "lacto solutio" incomplete recovery took place.

The long article is concluded by the concise relation of a *spasmodic spinal paralysis* in a horse, and those of other cases relating to amyotrophic lateral sclerosis, all of which Sonnenberg compares with similar cases observed in man.

* * *

INBORN OR SPECIFIC APTITUDE WITH TUBERCULOSIS MICROBE.—Professor A. Chauveau, at the *Academie des Sciences*, has lately related the researches that he has made to determine if there can exist a difference between human and bovine tubercu-

losis, from the point of view of the inborn or specific aptitude of robust individuals to receive or cultivate the microbe of tuberculosis. And from his researches the learned Professor was brought to the following conclusions:

1. There cannot exist any difference between the two species, human or bovine, from the point of view of the inborn or specific aptitude of robust individuals to receive or cultivate the bacillus of tuberculosis.

This is the necessary consequence of the scientific principle which imposes the unity and permanence in the laws that govern the manifestations of life, as all the other natural phenomena.

2. Thanks to this inborn aptitude, common to both species, and reserve made of possible, although little probable, meeting of individuals spontaneously immunized by unsuspected interference of a prophylactic classical influence, all human or bovine subjects, in perfect health, which would have received in like conditions active tuberculous bacilli would become infected in about the same manner.

3. Therefore, in the experiments of transmission of tuberculosis from cattle to cattle, all the subjects, without any exception, having contracted the disease it would necessarily have been the same if the experiment had had in view the transmission of tuberculosis from man to man.

4. Anyhow, clinical observations, only sources from which can be obtained the elements of a material evidence of the results of such hypothetical experiment, give indications which agree with those imperiously imposed by general laws of contagion.

5. Indeed, these clinical observations furnish a great number of examples of the most vigorous subjects which contracted tuberculosis as well as weak individuals in contaminated centers.

6. They also show with the same value that among the large number of individuals which escape infection in contaminated centers there are always weak organisms mixed with the robust. To find the cause of this resistance to contagion it is not in the conditions of the soil of the culture of the bacillus that it must be looked into. It is to the bacillus itself and to the more

or less favorable conditions that it may offer to the success of its implantation in the soil of the organism.

7. These are propositions firmly established, which complete in characterizing the non-value of the theory of the impoverishment of the organism soil as the essential cause of the propagation of the bacillus-germ.

8. At any rate, among the cases of localized centers of tuberculosis kept up by this upheld cause, there is not one where the aggravations or relapse of the disease which were attributed to the introduction and to the suppression of causes of physiological defects have not been connected at the very time with relaxation, the severity of the selection and the elimination of infecting subjects, relaxation and severity which are fully sufficient to explain the oscillations of the curve in the mortality of tuberculosis in human agglomerations.

9. Finally, this last study issued of the comparison between human and bovine species, from the point of view of the aptitude of robust subjects to contract tuberculosis, arrives at the same scientific and practical conclusions. Practically, there will be nothing done in the organization of the anti-tuberculous fight, if the efforts of hygienists do not particularly declare "war to death" to the infecting microbe and provide for the means to render the germ-carriers harmless towards sound subjects which might be exposed to infection.



MORPHIA AND OPIUM IN HORSES.—In the *Annales de Médecine Vétérinaire*, published in Brussels, Professor A. Vanden Eeckhout has recorded an experimental contribution to the study of the effects of these two drugs in horses.

Recalling first the various results obtained by the administration of morphia and of opium in the different species, he reviews those obtained in the experiments made by him and Professor Gottlieb on the action of these medicamentous substances. All those experiments having been made on laboratory animals,

Professor Vanden Eeckhout has thought, with good reason, to carry them out on large animals, and more particularly on horses. The experiments were numerous and resume in the two principal following conclusions:

1. ACTION OF MORPHIA AND OPIUM ON THE NERVOUS SYSTEM OF HORSES.—Writers admit generally that morphia, administered to horses in normal doses, produces a general nervous stimulation, rendering him at the same time less sensitive to pain and principally to that due to sharp instruments. Professor Vanden Eeckhout has never observed after the administration of morphia any analgesic action, but always excitement, even hyperesthesia increasing with the dose given. Under the influence of morphia, horses supported operation with difficulty, and the operator was often obliged to resort to intravenous injections of chloral. The exciting and hyperesthetic action appears every time morphia or ordinary tincture of opium is injected. It is not present when morphia has been taken off from the tincture of morphia revealing itself as a substance almost without action. Morphia promotes specially nervous excitement, while tincture of opium provokes before all muscular stiffness and fibrillar contractions.

2. ACTION ON THE DIGESTIVE CANAL.—First of all the author considers the numerous difficulties that one meets in studying the action of these two drugs in horses. To reach a result, he has searched if morphia and opium can reduce the quantity of feces expelled in twenty-four hours after their administration. From the experiments made in the best conditions, it results that the two agents are constipating when given to horses, the quantity of feces expelled in twenty-four hours is diminished. Tincture of opium with morphia taken off is positively less constipating, while it had remained without influence on the nervous system; ordinary tincture of opium seems to be more efficacious than the two other products.

These experiments are interesting to bear in mind. Indeed, they demonstrate that in horses, whose stomach plays but an accessory part in the phenomena of digestion, morphia gives rise

to constipation by direct action upon the intestines and not by an exciting effect upon the pyloric sphincter.

* * *

TENTH INTERNATIONAL VETERINARY CONGRESS.—A meeting of the Organizing Committee was held on the 10th of October, 1913, to carry on general business relating to this great event, and reported in the English professional journals.

Before a large number of members present, the minutes of the previous meeting were read and a large correspondence presented by the Hon. Secretary.

The treasurer made his report concerning the condition of the new subscriptions and recorded that he had received substantial subscriptions from many parts. He had at present in hand £1,050, and urged all members should send their contributions.

The question of the place of meeting was also considered and a sub-committee appointed to make inquiries and engage the necessary rooms.

Our confrères are aware of the very important step that was taken by the English Committee of organization in suggesting the formation of Propaganda Committees in the various countries of the world, where veterinarians could organize themselves, in view of an attendance at London, where the Congress will be held. Answering to this suggestion from the English Committee of organization, several of the Continental States have already made known the result of the formation of Propaganda Committees. France, Germany, Italy, the United States have already published the names of their constituents, and if all the members whose names are published do come to London next August, the gathering will certainly be tremendous.

As a member of the French Committee we could not very well belong to another, to that of the United States for instance, and on that account could not very well get directly important news from the Committee of organization, but whenever their official

information is made public, I shall allude to it at once, although probably the offices of the REVIEW in New York will have already announced them. For the present, I have to wait, as I have seen nothing recent, but cannot fail to take into consideration the special opportunities that our American confrères will have by joining the "*Study Tour of Europe*," which has been organized in Washington, with Dr. Adolph Eichhorn, of the Bureau of Animal Industry as director of the tour. The program is excellent, the itinerary most inviting, the arrangements perfect, and when one considers the many various opportunities which are offered, instructive as well as enjoyable, there will be no hesitancy, and "I am joining" will be the conclusion. Come on friends and colleagues, and do not let the chance go by without benefiting by it.

If I can be of any assistance to any, let him write to me.

* * *

BIBLIOGRAPHIC ACKNOWLEDGMENTS.—*Twenty-eighth Annual Report of the Bureau of Animal Industry*. This recent publication which is the report for the year 1911 has just been issued, or at least has just been received. It is, as all the preceding, a valuable work. The fact that many of the bulletins which are at various times published by the Bureau and have no need to be again in the final report gives the explanation why the twenty-eighth report forms a small volume in comparison with those that were published before; but with all that it is a book of nearly 350 pages, with quite a number of illustrations, 36, of which 3 are text figures.

The contents of the Report are as usual very interesting, and after the general report of the Chief, Dr. A. D. Melvin, there are several which call the special attention of veterinarians. First comes that of Dr. R. W. Hickman, on the *Government's inspection and quarantine service relating to the importation and exportation of the stock*.

This is followed by a masterly article on *Measles in Cattle*, by

Dr. B. H. Ranson, which is illustrated by seven handsome plates. The article is a good addition to the general knowledge of the cysticercus, from the point of view of the general practitioner and of the inspectors of meat.

Doctors J. R. Mohler and Adolph Eichhorn have furnished in the report a long article relating to *Malto fever*, with special reference to its diagnosis and control in goats. Three plates are illustrating the thorough and complete article of the Chief and of the Senior pathologist of the Pathological Division.

Infectious abortion of cattle and the occurrence of its bacterium in milk follows, with an interesting statement of Dr. A. D. Melvin, to the article of Drs. F. C. Schroeder and W. E. Cotton on the presence of the bacillus of infectious abortion found in milk, the *Bacillus abortus*. This is a very interesting subject with which the readers of the REVIEW have already been made acquainted by the published papers of the authors in that journal.

This article is completed by another from Drs. J. R. Mohler and Jacob Traum on *Infectious Abortion* in cattle, where the complete review of the disease is considered.

Finally, as subjects of veterinary interest, the Chief and the Senior bacteriologists of the Pathological Division write an article on the *Immunization tests in tetanus*, where the standardization of the antitoxin, its applications, and its curative effects are considered, and where the subject of treatment of tetanus by magnesium sulphate calls from the authors the suggestions that more extensive application of the treatment is desirable to judge of its value.

The balance of the report is made up of subjects and miscellaneous information, similar to those that are generally found in this publication.

* * *

BIBLIOGRAPHIC ITEMS.—*Preventive measures* against equine influenza based on its bacteriology, by N. S. Ferry, from the Research Laboratory of Parke, Davis & Co.

From the same, *Correcting Water*, methods of treating hard and alkaline waters. How to remove objectionable ingredients, etc., etc., by H. C. Hamilton.

U. S. Department of Agriculture.—*Important Poultry Diseases*, by D. E. Salmon, D.V.M.

Bureau of Animal Industry. *Regulations* relating to products intended for use in the treatment of domestic animals.

Agricultural Journal of the Union of South Africa.—October, 1913.

Album of Anti-cholera serum plant.—Department of Agriculture of Tennessee, D. G. R. White, State Veterinarian.—(Nashville).
A. L.

THE VETERINARY CONFERENCE AT ITHACA.

The sixth annual conference for veterinarians was opened in one of the lecture rooms of the New York State Veterinary College, Ithaca, N. Y., at 9.15 a. m., January 8, 1914, by Director Moore, who made some general remarks in reference to the unsatisfactory condition in which tissues are sometimes received at the laboratories for examination, and also explaining that in some instances, if the condition of the tissue be ever so favorable, positive information is sometimes impossible. He then gave a splendid talk on contagious abortion, reviewing the disease and pointing out that at present most pathologists were of the opinion that the cause is the bacillus abortis, and that its distribution is in the uterus, foetus and milk, with the probability of fodder, litter, etc., acting as carriers. He said that the virus is probably confined to the animal, but that the organism may live in exposure for a varying length of time. However, as it is not spore forming, it is the present belief that it is not particularly hardy and that a 2½ per cent. solution of cresote is sufficient to destroy young cultures in 2½ minutes, the thermal death point being about 59 degrees Cent. for ten minutes, or thereabout. As to its pathogenesis, it does not produce any

morbid condition other than abortion and the *sequelae*, such as diseased ovaries, and retained placenta in the cow, but it does affect nearly all the organs of the guinea pig.

As to ways of infection, this is one of the difficult aspects of the disease which we are not clear on. It is a question whether the bull acts as a carrier or actually becomes infected. An attempt has been made at the Veterinary College to determine the methods of infection, and accordingly five pregnant cows were injected in the jugular vein with the virus. All aborted in from seven days to a few months after injection. In another similar experiment, one out of three aborted, and in still another, where two were injected, neither of them aborted. Four cows fed the organism, all aborted. Others similarly fed, since, all resisted the virus. Others have been experimented on by subcutaneous injection and by infection per vagina, with varying results. At present we know of no way by which we can take a culture and produce abortion with any certainty in the bovine, but we are almost always successful in the guinea pig by subcutaneous injection, being able to again recover the organism in the uterus. The general belief is that cultivation lessens its virulence.

METHODS OF DISSEMINATION.—It is probable that the dissemination of the virus from the infected animal begins at the time of abortion, but it has not been determined how long it remains in the uterus thereafter. It is believed to be present in most cases for 60 days, but, as with nearly all bacterial diseases, it may in some cases be a much shorter or longer period. It may be present in the milk for a long time, and as to the way of udder infection, most authorities are of the opinion that it occurs through the teat from the infected stable, or vaginal discharges. This would explain its presence in the milk of animals which have not or do not abort. The various methods of diagnosis which have been tried, are the precipitin test, which is not satisfactory, and the abortin test, which is analogous to the tuberculin test. This likewise has not proven satisfactory for general use. The complement fixation test is very complicated for practical

purposes. But any of these reactions may mean that an animal is infected and may abort later, or that an animal may be affected and has aborted, or that an animal may be affected and never abort.

Our present knowledge of vaccine as a treatment has not proven satisfactory. It is Dr. Moore's opinion that strict hygienic measures is the best method of control known to-day.

Following Dr. Moore, Dr. Rich, of the Vermont Experiment Station, stated that while he could not add much to the information given in the bulletin which was issued a few months ago relative to the virtue of methylene blue in treating contagious abortion, it was still his opinion that methylene blue has some advantages in the treatment of this disease, but that we have not sufficient information to base any conclusion as to its being a specific remedy. It is his present belief that small doses, given more constantly, a heaping teaspoonful (about one-third ounce) for four or five months and beginning in early pregnancy, is the most efficient way of using it.

Dr. Williams stated that he had not found a bull in any breeding herd whose blood did not react to the agglutination test, and that in his judgment we have no evidence to show that the bacillus in the udder, vagina or the digestive tract causes abortion, and that, further, it is his opinion that no treatment, either medicinal or vaccine, can reach the utero-chorionic space which in his contention is the seat or origin of abortion.

Prof. S. H. Gage then gave a very interesting and instructive lecture upon eye refraction, stating that the art originated with the astronomer Kepler in 1604. The inversion of the image on the retina and the accommodation of the iris and crystalline lense was very intelligently and simply explained by the use of a lantern and the focusing of the different lenses.

The next speaker was Dr. Theobald Smith, professor of comparative pathology at Harvard University. The world-wide recognition of Dr. Smith as a bacteriologist, and his clear, plain way of expressing the great rôle which vaccines are playing in clinical medicine to-day, made Dr. Smith's address, in our opin-

ion, was one of the most interesting discourses that a body of veterinarians have ever had the good fortune to hear. He pointed out that much of the knowledge of immunity and its application to the human family has been derived from animals. Using hog cholera as an illustration of how even though a virus may be peculiar to one species, that there are various phases which influence even the most specific virus, such as susceptibility of an individual, breed, food, temperature, virulence of the organism, etc.; how that some diseases may be self-limited by acquiring immunity and how that some contagious diseases are very virulent and others rarely fatal. He pointed out the value of vaccine even in such mild diseases as typhoid, where ordinarily but about 10 per cent. of the victims die when the virulence is of the average type, and that vaccines have practically driven the disease from our American army where it was a thing of great dread. His expression of vaccines was that they increased the body's resistance against disease and aid recovery by giving nature a push, so to speak. It was said that the Chinese used direct inoculation to mitigate certain diseases thousands of years ago, and that a close study has shown that the introduction of a virus into a body in a way other than through the natural channels is quite likely to decrease its virulence. Following inoculation of the virulent material, an improved method was demonstrated by Smith and Salmon (Theobald Smith), where the virus was attenuated or killed by heat, and it is by use of dead vaccines that the vaccination for certain diseases has been made possible and useful. There are, however, certain diseases where immunity can only be produced by the living organisms. This is our present opinion, for instance, with reference to tuberculosis. Then, there are some diseases where vaccine is of some value even after the virus has entered the body. Such, for instance, as smallpox, if the vaccine is applied within three days after the infection. And so with rabies, where the character and location of the bite does not make possible an extremely short period of incubation.

His explanation of how in certain chronic cases surgical

interference oftentimes opened up the walled-in tissues which had been deprived of the body fluids where the natural anti-bodies in these fluids could not perform their functions; also that surgical interference produces a hyperemia, augmenting the blood supply to these parts and greatly assisting the work of the vaccines.

Some vaccines will not work satisfactorily when of a different strain or group, and an effort to overcome this is attempted in polyvalent serums and vaccines. The autogenous, of course, is the most scientific and useful and should be used in preference to the others.

Speaking of autotherapy, it is Dr. Smith's opinion that giving the discharges per os is contrary to our knowledge of digestion, where substances are supposed to be broken up and torn apart.

The meeting was then adjourned for luncheon. Following luncheon, we inspected the magnificent new buildings which have recently been erected, and it was the opinion of everyone that the splendid arrangement and the substantial and sanitary construction displayed great merit on the part of those who had to do with the planning; and as a whole are a pride to the veterinary profession and a credit to the state.

In the evening we were favored by the delightful presence of President Schurman, who occupies a warm spot in the heart of every veterinarian who knows him. It seems that each year his personal sacrifices add to our great admiration for him. On this occasion, instead of taking an afternoon train to New York City where business exacted his presence the following day and where he might have spent a comfortable night in the hotel, he deferred his trip so that he might welcome the veterinarians, and then crawled into one of those things termed sleepers that make some of us feel anything but happy who are accustomed to less comforts than is the president.

President Schurman expressed his desire to make the worth of the New York State Veterinary College felt throughout the state. He reviewed the history of the university and stated that the truly modern university was developed in this country, Cor-

nell being the type, where, as expressed by Ezra Cornell, every one can get an education on all sciences taught to-day.

He emphasized the fact that science does not stand still and that such subjects as chemistry, physics and biology have been broadening, which in turn necessitates the broadening of the college curriculum, and that Cornell stands to meet any advancement and is ready to extend its curriculum to a four-year course at such time as conditions seem to require it.

In closing he most cordially invited the veterinarians to return another year.

The next speaker of the evening was J. C. Buckley, of Detroit, editor of the *Horseshoers' Journal*. This paper was illustrated by lantern views which were very interesting, showing different types of conformation of legs and feet, and also various shoes used in orthopedic shoeing.

During the lecture several times when the subject of orthopedic shoeing was being discussed, it occurred to us just how far the shoer could be trusted to carry the paring knife and the hot iron into the domain of surgery, and where the art of shoeing under such conditions would end and veterinary surgery begin. We personally know of a certain shoer in a town where some of the highest class horses in America are cared for; this shoer is recognized as one of the most expert in the country, a man of good education and excellent judgment, but he would not think of attempting to remove the side of a foot or otherwise surgically treat a serious quarter-crack, always advising the owner that such work can only be reliably done by a man trained in veterinary science. There are other shoers in this same town who if they had even a smattering of some of the principles set forth by Mr. Buckley in his paper, to give them a shop full of horses would be like turning "a bull loose in a china shop." We are wondering if conditions of this kind are not quite universal.

We adjourned at 9.30 and enjoyed a most delightful smoker, where we were liberally treated to good music and singing, good cigars, and a buffet lunch served by a body of bright young men that any college might be proud to call its students.

On the morning of January 9th, Dr. Frost read a paper entitled "Fistulus Withers," describing in detail a method now in vogue at the college for this operation.

Dr. Frost was followed by Dr. Udall, who read an exhaustive paper on "Indigestion in Cattle," which was of great interest to the country practitioner.

At 11 o'clock, Dr. H. J. Milks discussed the subject of hog cholera. He spoke of how within the last few years conditions had so changed in our eastern states that particular attention to infectious swine diseases had become very necessary, which in turn has lead up to the necessity of the preparation of hog cholera serum. He wished to have it clearly understood that the value of the serum is confined to the specific disease, hog cholera, and pointed out that the only positive method of diagnosis would be the inoculation of a well pig with virulent blood, but as this is a pretty expensive method of diagnosis, we must in a measure rely on presentations associated with the disease. He enumerated the symptoms which are fairly constant and reliable, and mentioned the pecechia of the kidneys as one of the most constant lesions. He also conceded that when a virulent type of the disease gets into a herd of swine, it is disastrous, as it is not confined to the ones that die immediately, but that the chronic cases are of no value owing to the fact that they do not do well or amount to much, even though they recover, and they remain a source of virus spreaders for such long periods that it is probably better judgment to destroy them at once. He also spoke of how in the acute type some animals die suddenly, developing no positive lesions, and that a post mortem under such conditions may be quite negative.

As to the serum and simultaneous methods, it was his opinion that where the disease is not prevalent and we wish transitory protection, serum alone would seem the safest and sanest, it giving a protective immunity for several weeks. The simultaneous method establishes immunity for life, but it is his judgment that the simultaneous method is best adapted to states where hog cholera is more widespread than in our own, and that

we should ever keep in mind the danger of the virulent blood spreading the disease in free localities. If for any reason the simultaneous method seems warranted, he believes it would be better procedure to first immunize with serum alone, to be followed later by the simultaneous treatment.

We adjourned at noon and the meeting of the various alumni associations took place until one o'clock. A light luncheon was served at one p. m. and we returned to business again at two.

Hon. Calvin J. Huson, Commissioner of Agriculture, was on the program for an address at this time, but, owing to an emergency of great importance which demanded his presence elsewhere, he requested Assistant Commissioner Flanders, of the Agricultural Department, to attend the conference in his stead. Mr. Flanders, who is known as a very happy speaker, discussed the agricultural law and the relation of the veterinary profession to agriculture, and made very clear the operation of the statute and our duties as veterinarians in controlling communicable diseases. He said the magnitude of our calling could be estimated by the fact that one species of the animal kind alone produced in the United States five billion dollars' worth of butter per year, these animals being distributed over five million farms. Mr. Flanders was in good form and was enthusiastically received.

Following Mr. Flanders, Senator Godfrey addressed us in encouraging words for the future of the profession, and congratulated us upon the excellent methods of teaching now in vogue.

Prof. Williams read a paper on "Retained Placenta." Williams-like, he attacked the question from all points and advanced some very good arguments, as well as going minutely into the structure and functions of the uterus and foetal membranes. The very clear manner in which he pointed out the freedom of the foetal membranes from the maternal calyledons during early pregnancy, which allows the expulsion of the foetal membranes and the foetus in all cases of early abortion, say up to four or five months, would seem to us a very good and practical point

to lay before the general practitioner. His contention is that whenever we have retained placenta it is always due to an inflammation which exists prior to the abortion and not after, and that the adhesion of the membrane is occasioned only by the inflammatory processes of the cotyledons incarcerating the chorionic villi. It is unfortunate that time did not allow a discussion on this phase of the question, as it is an important one and we are of the opinion that many would like to have exchanged ideas on the subject.

The last speaker was Dr. John W. Adams, his subject being "Veterinary Dentistry." The way in which Dr. Adams reviewed dental history and the anatomical and histological structures involved in dental work, as well as his expression of good practical ideas, left little to be said upon the subject. Drs. Berns, Williams, Hollingsworth and Gill made some very practical remarks that were appropriate and useful in actual practice, and our friend, Ben Pierce, from Springfield, Mass., explained in no uncertain terms that he had some knowledge of the attention that horses' teeth oftentimes need when honestly applied for the comfort of the animal.

We then adjourned from this most successful conference and reassembled at the New Ithaca Hotel, where we took part in a delightful banquet of the Society of Comparative Medicine and the Association of College Alumni. We are not certain just how many attended, still it seemed as if the dining-room was filled in every nook and corner, and while we were obliged to leave before the function ended, we know from the list of speakers scheduled on the menu cards that many good and witty things were added to this pleasant occasion. J. F. D.

MARK YOU THIS—THE ARMY AND NAVY JOURNAL
SAYS THE ARMY VETERINARY SERVICE BILL
WILL LIKELY PASS.

The Army and Navy Journal, which is the organ of the army and navy services and of the militia, and knows what it is talk-

ing about, because all the secrets of these services are whispered into its ear, says that there are excellent prospects of "Mr. Hay's veterinary corps bill," as it names it, that is the army veterinary service bill, as we call it, passing this session of congress. Editorially, in its issue of January 3d, it tells us:

"Immediately after the Christmas holidays the House Committee on Military Affairs will take up the army appropriation bill and put it in shape to be reported to the House. All hearings have been held, and the committee is now ready to take up the bill section by section. The only new legislation that has received any consideration from the committee up to this time is Chairman Hay's veterinary corps bill. It has been practically decided to report this measure out at the first session of the committee after the holidays that it can receive early consideration by the Senate. An effort will be made to pass it at an early date through the House, as there is considerable sentiment for the bill outside of the army, and there are excellent prospects of its being passed at this session."—(*Army and Navy Journal*, Jan. 3, 1914.)

This news makes us rosy with gratification coming from *The Army and Navy Journal*, which more than "has its ear to the ground": it is linked in arms with the War Department and knows, barring political accidents, just what army legislation is going through and which is going to be "Bristowed"; that is, which is to be given a dose of the political prussic acid which will end it. All, absolutely all, official information concerning the army and navy, which it is possible to make public without a breach of *lese majeste*, meaning the sin of publishing official information ahead of time, is to be found in its columns. Invariably it knows which way the wind is blowing for army legislation, for its articles are submitted to the War Department for censorship, if there is any doubt of their offensiveness to the Department, and in all ways it endeavors to publish facts about the Department as they are, or as they are to be. The statements of *The Army and Navy Journal*, when it comes to army legislation, are dependable. It would not have published the editorial

note we have quoted, unless it knew that there was something behind its words.

Remember, too, that what is gazetted in the columns of *The Army and Navy Journal* is read by every army officer, wherever he may be, sooner or later, and that its utterances are taken as gospel. Such scrutiny of its columns by military men, as it knows takes place, makes it know whereof it speaks before it puts anything into cold type. Hence it is conservative to the very verge of stiffness and obduracy. Every veterinarian in the country knows that the army officers, taken as a majority, have never had an embarrassing fondness for the veterinary profession. Consequently there has never been a time when *The Army and Navy Journal* has burdened its conservative files with proposals for improvement of the veterinary service of the army; for it reflects every hue and shade of thought in the army service and knows that the average army officer did not take proposals for veterinary legislation seriously. Moreover, it has always published the news of the transfers from one regiment to another, from one part of the country to another, from one detail to another, of every commissioned and non-commissioned officer mentioned in army orders; but never so much as a word came out on orders for veterinarians.

Why, then, this change of front on the part of "our esteemed contemporary," to use the cant of newspaperdom? The reason is because it has learned that the plea of the veterinary profession for its rights in the army has found favor with the present administration. It has been told the lay of the land and knows that the veterinary profession has found favor with the present government leaders in the Senate and House and in the War Department itself; yea, can reach the White House, through its friends in the President's cabinet and through intimate friends belonging to his Princeton University lifelong relationships. No longer is the veterinary profession to be roughly pushed aside and sniffed at. There is indeed meat and meaning in the announcement in the quoted remarks of this newspaper of the army and navy services.

Look at that quotation. Read it again. It says, towards the close, "there is considerable sentiment for the bill outside of the army." That harks back to what the profession did for the army veterinary service bill in the last session of congress, and refers particularly to the furor of our agitation, that of our friends and the friends of our friends, in favor of the bill. This statement of *The Army and Navy Journal* is proof positive that our drive was an iron drive and that at last we have hit the mark. Even the conservative *Army and Navy Journal* expresses as news the fact that our agitation has been effective in Washington. Gleeful news, isn't it?

What has been quoted in the beginning of this article is unquestionably true. But the excellent prospects for "Mr. Hay's veterinary corps bill" (H. R. 4541) may be negated by our inertia and here this legislation is fraught with the greatest danger. Do not forget that the personal touch is the influence which is most powerful. If you personally know a senator or representative to congress, or have a dear personal friend who knows him, reach him through this personal touch by speaking to him or writing to him about H. R. 4541, which is the official designation of the bill aiming to commission veterinarians in the U. S. army. There are about a hundred new representatives in the present congress, and missionary work is needed that they may be schooled in our deserts. The senators need even more attention. The man who knows Senator — or Congressman — is the man who can reach him. H. R. 4541 is the bill to be spoken of. Your personal touch is the winning hand which brings the senator or representative to the proper attitude towards this legislation.

G. S.

THE LOBECK BILL.

We are pleased to direct attention to the Classification Bill introduced into the House by Congressman Lobeck, of Nebraska, on November 14, 1913, published on page 653 of this issue.

This bill benefits all employees of the B. A. I. service, but as the REVIEW is especially interested in the veterinarians in the service, we will only comment on that part of the bill which affects them.

It provides that the entrance salary of veterinary inspectors shall be \$1,400 per annum; and that those who at the date of July 1, 1914, may be receiving a salary of less than \$2,400 per annum, shall thereafter, from said date, receive an annual increase of \$100 until their salaries shall amount to \$2,400; further increase in salary to be made at the discretion of the Secretary of Agriculture. This seems very encouraging for our brothers in the B. A. I. service, and the benefits that will accrue to the Federal Government, through an increased interest that will be created in those now in its employ, and the attraction to that branch of the Federal veterinary service, of men of the first quality, will repay the increased expenditure manifold, should this bill become a law. It therefore behooves every member of the profession throughout the country to use his influence for the passage of this bill by the same congress that will make the Army Veterinary Bill a law. Thereby placing all the veterinarians in the Federal service on a better footing and increasing the efficiency of the services they render to the Government.

OFFICIAL TOUR OF EUROPE OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

This official tour of the A. V. M. A. to attend the tenth international veterinary congress in London, August 3 to 8, 1914, under the direction of Dr. Adolph Eichhorn, is attracting very general attention amongst the members of the American Veterinary Medical Association, their families and friends; and it would seem from the present outlook that a very large body of Americans would make the tour and arrive in London to attend the congress. A copy of the itinerary and cost of tour was published in the August, 1913, issue of the REVIEW (price there given as \$505 should be \$595, as corrected in September) and can

be referred to in that issue; or a copy of the itinerary can be obtained by writing Dr. Eichhorn, Bureau of Animal Industry, Department of Agriculture, Washington, D. C., Dr. C. J. Marshall, 39th street and Woodland avenue, Philadelphia, Pa., or the Bureau of University Travel, Trinity place, Boston, Mass. The prospect of a summer spent in such a pleasant and educational manner is sweet to contemplate, and for all those who can look forward to such an enlivening prospect, we urge to complete their arrangements with the business management whose arrangements for your accommodations are awaiting your decision. And those who decide late may find that they can no longer be booked. Do not let that be *your* fate.

THE HORSES WON.—The following happened a short time ago in Boston: Mr. A. wanted to sell Mr. B. a five-ton auto-truck. Mr. B. said, "If your auto-truck can do as much as my span of horses, and do it at less expense, I'll buy it, but you must prove that it can." Just at this time Mr. B. had a large shipment of butter arrive which must be transported from the freight depot to North Market street. Team and auto-truck started in at the same hour and worked all day. The team delivered five tons more during the same time than the truck, in spite of the fact that the truck had one more man.

Mr. A. asked for a second day's trial. This was granted, only Mr. B. said, "I must have the same number of men on my team that you have on your truck." Agreed. That day the team delivered ten tons more than the auto-truck.

If any one questions these statements we shall be glad to furnish names, dates and witnesses. Also the name of a prominent firm in Boston that bought two handsome delivery cars at \$3,000 each. After an experience sufficient to determine their value the order was given to sell them and replace them with horses. One sold for \$125, and the other for \$100. When asked why the effort was not made to get more for them, the answer was given, "We grew so sick of having these in the shop when we wanted them that we were glad to get rid of them at any price, and have something we could depend on."

We only mention these two cases out of others that have come under our personal observation to confirm our claim that the horse is not yet in any danger of becoming a memory of the past.—(*Our Dumb Animals.*)

ORIGINAL ARTICLES.

STUDIES ON THE VIRUS OF HOG CHOLERA.^{o*†}

BY WALTER E. KING, F. W. BAESLACK, AND GEORGE L. HOFFMANN, DETROIT,
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Introduction—The terms “filterable virus” and “ultramicroscopic organisms” are frequently used in the descriptions of some 30 important infectious diseases of man and animals. These terms constitute a convenient form of expression, as in certain cases it would otherwise be necessary to state “specific cause unknown.”

Among the important diseases which fall into this class, as enumerated and briefly described by Wolbach,¹ are yellow fever, molluscum contagiosum, denuge fever, verruca vulgaris, trachoma, sand-fly or three-day fever, acute anterior poliomyelitis, measles, typhus fever and scarlet fever, which affect man only; rabies, foot and mouth disease, variola, and vaccinia affect both man and animals; whereas hog cholera, fowl pest, cattle plague, sheep pox, African horse sickness, swamp fever of horses, and Rous's chicken sarcoma are among those affecting animals only. Canine distemper, which Wolbach mentions as being produced by a filterable virus, has been demonstrated by Ferry² to be due to a bacillus termed by him *B. bronchisepticus*.

Since the recognition of the filterability of hog cholera virus by De Schweinitz and Dorset, 1903-1905, very little progress has been made in elucidating the nature of the specific etiological factor involved.

Dinwiddie,³ from a series of carefully planned centrifugation

* Reprinted from the *Journal of Infectious Diseases*, Vol. XII, No. 2, March, 1913.

* Received for publication February 15, 1913.

† Read before the Society of American Bacteriologists, January 2, 1913.

experiments, concludes that the infectious agent involved in hog cholera is more or less closely associated with the red blood corpuscles. Aside from the report of Dinwiddie, the knowledge accumulated in regard to this subject is relatively meager and scattered.

The filterability of a given virus does not preclude the possibility of the presence in that virus of relatively large microorganisms at certain periods, according to the stage of development in their life cycle. Borrel⁴ demonstrated a protozoan, *Michomonas mesnili*, which, during certain stages of its development, would pass through the Berkefeld and Chamberland filters.

Loeffler also has shown that a flagellate belonging to the genus *Bodo* would pass through Berkefeld filters, which were capable of preventing the passage of *B. prodigiosus*, even after an hour's filtration. Thus, filterability cannot be taken as an indication of the size of a given organism, because the passage of organisms through filters depends also on their plasticity and their ability of accommodation to the pores of the filter. In this, the smaller forms of motile parasites differ from bacteria of relatively the same dimensions. It therefore seems possible that some of the filterable viruses causing disease may have a stage in the cycle of their development which is visible under the microscope.

Betegh⁵ of Hungary has succeeded in retaining hog cholera virus by means of the Bechhold ultra-filter. His experiments consisted in the filtration of two different strains of virus and the injection of each of the filtrates into three susceptible pigs. The six pigs remained well and the conclusion was that the virus had remained in the ultra-filter.

In 1910,⁶ a comparative histological study of the blood of normal hogs and cholera-infected animals was conducted. In this work, the blood of hogs suffering from cholera, in comparison with normal blood, was studied in a routine way on the hemocytometer and with the ordinary blood stains, but at the same time much care was exercised in attempting to find any

differences which might indicate the probable nature of the causative factor. Aside from the data obtained relative to the ordinary blood examinations, nothing of note was observed in the specimens of hog cholera blood.

A few months ago a comparative study of normal hog blood and blood from animals suffering from hog cholera was undertaken, in order to determine whether any differences could be detected by means of the dark field method of illumination. A preliminary report⁷ of this work has appeared.

The fresh blood of normal and diseased hogs was collected aseptically in sterile sodium citrate solution and kept in the incubator until the examination was completed. The blood was obtained from the caudal artery after a small portion had been clipped off with a sterile instrument. In this way bacterial contamination was reduced to the minimum.

In the blood of both normal hogs and animals suffering from hog cholera, as in the blood of any animal, many peculiar structures are observable. The blood of normal hogs thus examined on the dark field may show, in addition to the normal structures, a few granular bodies, sometimes a few bacterial cells from possible extraneous contamination and filaments. The latter may assume the form of "dumb bells," "chains," "droplets" or flexible filaments, which by an untrained observer might easily be mistaken for spirochetes. An excellent description of these bodies as well as others found in the blood of normal animals is given by Balfour.⁸

Betegh, in examining the hog lymph and serum respectively, from two animals dead from hog cholera, evidently has mistaken some of these filaments, described by Balfour, for bodies of some possible significance. In his very recent article on ultra-filtration experiments, Betegh⁹ describes, in a rather confused way, his limited dark field findings as follows:

"Series I. January 16, 1912. Animal infected and died with hog cholera under natural conditions. Pathological changes: Typical stratification (button ulcers) in cecum and colon; edematous infiltration along the arteria coronaria cordis;

infiltration in the right apex of lung; disseminated infiltrated areas in the right lung; parenchymatous degeneration of the kidneys; hemorrhagic inflammation of the lymph glands. Diagnosis: Hog cholera. Microscopic findings: Scattered bipolar and other (colon) bacilli in the organs. In the lung lymph beside these, small slightly stained bodies. In the dark field examination, actively motile, massed bodies from 0.3 to 0.5 microns in size are visible, which are strongly light-refractive. Many appear to have a small apophysis. Very often dumb-bell like forms are seen, and further, spirochete-like micro-organisms, which have at each end a light-refracting round knob. Cultural: On alkaline agar these have grown at 37 degrees after 24 hours, many coli, bipolar and bacterial colonies similar to the *B. suis* *stifer*."

"Series II. April 16, 1912. Swine sickened and died under natural conditions. In colon a typical button ulcer of the size of a small coin. Several lentil-sized ulcers at the point of anastomosis of the small intestine into the colon. The mesenteric lymph glands swollen and hemorrhagically inflamed. The apex of both lungs infiltrated, atelectasis. The pleura was weak and covered with pseudo-membranes. Surface of incision of the lungs marbled; beside yellow necrotic groups, different stages of hepatization of partial pneumonia were visible. Diagnosis: Hog cholera. Microscopically with diluted carbol fuchsin solution, numerous, short bacteria, rounded off at both ends, occasionally typically bipolar colored, were visible. With the Giemsa staining, in part, the same form. Numerous 0.3 to 0.5 micron sized, ovoid or round forms were seen, which seemed to arise from a chromatin substance. In colored streak preparation from the button ulcers, intra- and extra-cellular typical spirochetes were seen. Similar bodies were abundantly visible with the dark field in the serum. They were actively motile. Between small dumb-bell shaped forms were seen also spirochete forms."

From the above description it is quite evident that Betegh based his observations on the fallacies to which Balfour has so aptly called attention. In the blood of different species of normal

animals, filaments may be observed which at times closely simulate spirochetes. Most of these "pseudo-spirochetes," as seen in blood on the dark field, present a knobbed appearance at each pole. After one has become accustomed to the appearance of these filaments, one can readily distinguish the lack of motility, in spite of a flexuous distortion, which is assumed as the filaments are carried by a slight current in the fluid of the preparation. These filaments are also lacking in refractibility and are relatively slender in comparison to the spirochetes recognized in this work.

Bacilli are easily recognized in the dark field by the complete rigidity of the cells and, when flagella are present, by the characteristic tumbling motion.

Results from the dark field examinations of specimens of blood from some 50 normal hogs indicate that, as a rule, the blood is relatively free from granules. Under ordinary conditions, and with few exceptions, the blood of normal hogs examined has been designated in our notes as "clean." There have

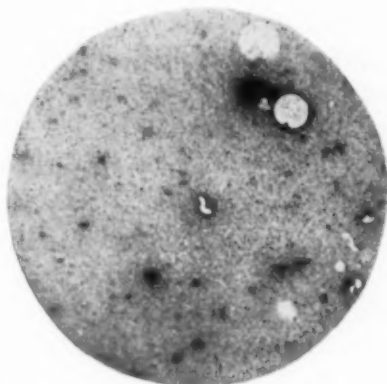


FIG. 1.—Microphotograph of spirochete in blood of Hog 504. India ink preparation.

been some few instances in which the blood of hogs unexposed to cholera, and in apparent normal condition, have shown the presence of numerous granules. The presence of these granules in normal blood, in the majority of cases, has been traced to ruptured leukocytes.

In the specimen of blood from all infected hogs, which have been observed by means of the dark field, a relatively large spirochete has been found. It averages from five to seven microns in length and one micron in width. The body of the organism is flexible and round at its ends. It presents no knobbed appearance at its poles. Actively motile, it revolves about its longitudinal axis. Its motility is undulating in character and its spirals are fixed. A few of these organisms have been observed dividing longitudinally. In one permanent microscopical mount, prepared by india ink fixation, one of these organisms apparently shows a polar flagellum. On the dark field this spirochete is readily distinguished from bacteria on account of its lack of rigidity and its characteristic motility, and from "blood filaments" by its greater refractive properties and characteristic morphology.

This spirochete has not been found in large numbers, in any of the blood preparations. However, in nearly every specimen examined, more than one has been observed and in many cases five or six have been found with little difficulty. As a rule the organisms have been found to be more numerous at the height of the disease. The specimens of blood examined have been diluted in the proportion of about one to ten or fifteen with sterile sodium citrate solution, which factor should be considered in contemplating the number observed in a given positive specimen. Moreover, it is suggested that this organism, when observed as a spirochete form, constitutes only one stage of its development.

Certain types of granules appear to be characteristic of blood from cholera hogs. It usually contains many granules, some very fine, yet more distinct than blood dust, some larger still, and some very distinct, highly refractive bodies. In many specimens of cholera blood were observed innumerable small granules, which were much more definite and distinct in outline than blood dust, and easily differentiated from the whitish, partially refractive granules from ruptured leukocytes and from the more highly refractive and larger bodies composed of debris, bacteria and

filaments. In this work the presence of these granules appeared to be so characteristic of blood from cholera hogs, that it became an invaluable aid in finding the spirochetes. While these particular bodies may be disintegrated blood elements resulting from disease processes, yet it may properly be suggested that some of them may represent certain stages in the life cycle of the spirochete which has been observed.

The majority of the hogs used in these experiments were inoculated with virus which was diluted 1 to 4 with sterile physiologic salt solution and filtered through Berkefeld filters. In the filtrates only a few granules were visible when studied on the dark field.

In this connection it should be mentioned that the majority of the dark field examinations which are included in this work have been checked by each of us. In addition to the above means of controlling the results, specimens of blood were at times collected by an assistant who designated the specimens by symbols. As the daily examinations often included specimens from both normal and diseased animals, the results were put to a practical test, and in no instance did the results from the dark field examinations deviate from the clinical conditions of the animals whose blood was examined. In some instances, as will be shown by the following detailed results, the presence of hog cholera infections was practically detected by the dark field examination before it was known that the animals showed any symptoms of the disease.

It is interesting to note that in 1894 Dr. Theobald Smith¹⁰ submitted the following brief report on "Coarse and Fine Spirilla in the Intestine of a Hog":

"The recently published articles on fine spirilla in the excrement of cholera subjects prompt me to communicate an observation from animal pathology. Early in 1889 I found non-liquefying comma bacilli in small abscesses of the large intestine, in a hog which I have briefly described in this journal. In streak preparations of the same, stained with alkaline methylene blue, I found, besides large quantities of vibrios, also a great

many fine spirilla, of two to three wave-lengths. The wave-lengths of fixed form are about two microns. A preparation, now more than five years old, still shows the tiny spsirrilla very distinctly. At that time they never appeared again in cultures. Further investigations concerning the presence of this organism in other animals have not been made."

Betegh, in a lecture and demonstration given before the Veterinary Congress at Budapest in May, 1912, called attention to

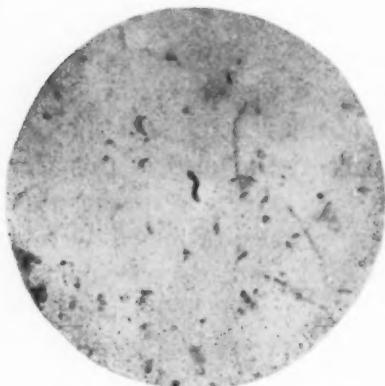


FIG. 2.—Microphotograph, spirochete stained by Giemsa method, from intestinal ulcer of Hog 556.

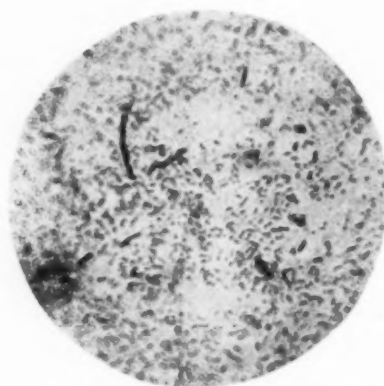


FIG. 3.—Microphotograph of spirochetes in impure culture, from cecal ulcer of Hog 551.

the spirochets which were demonstrable in the ulcers of animals dead from hog cholera.

Little difficulty has been experienced in finding spirochetes in the intestinal ulcers of hogs dead from cholera. In the present work, the ulcers, as found in the cecum of cholera-infected hogs, have been obtained as free from contamination as possible, washed with sterile water, and intermittently scraped with sterile instruments. Portions of the scrapings from the diseased submucosa, after the above treatment, have then been examined on the dark field and in stained preparations, preferably by the Giemsa method. While it thus appears possible to demonstrate spirochetes in hog cholera ulcers with uniformity, yet a large variety of bacterial species of course constitute the flora. With present methods of study, therefore, the recognition of these

spirochetes in the intestinal lesions cannot be taken as of great significance. Whether or not some of these spirochetes in the intestinal lesions bear any relation to those present in the blood of cholera hogs is, of course, an open question. It is possible that the spirochetes found in the blood enter the lymph and blood stream at an early stage of the ulcer formation. This would offer a possible explanation of their comparatively small number as seen on any one blood mount.

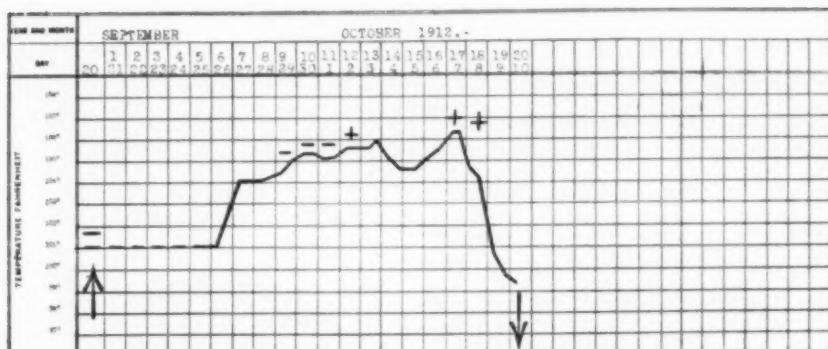
The details of the experiments may be better understood by a study of the following temperature charts and laboratory notes. The temperature charts include the time of inoculation, death or release of each animal, and other necessary data, including brief notations of clinical conditions and changes observed after death. The results of the dark field examinations are indicated by positive and negative signs placed above the temperature curves on the dates when the observations were made. In some instances the presence of granules or freedom of the blood from granules is indicated by abbreviations, gr. (granules) and c. (clean).

B.A.I. strain of virus—The history of the strain of virus, designated in these notes as the "B.A.I. strain of virus," was supplied by Dr. Giltner of the Michigan Agricultural College as follows: "This is a representative of the original strain of Bureau of Animal Industry virus secured by Dr. Marshall at the conference at Ames in May, 1908. We have never kept any other strain of virus in the laboratory for any length of time. Practically all of our serum has been produced on the basis of this virus. It would be possible but very difficult to trace the passages through which this virus has gone since we first began to use it."

Beginning with Hog 446 the blood of practically all animals used in these experiments was carefully examined before inoculation in order to control the results.

Hog 446, inoculated with the B.A.I. strain of virus (Hog 444), manifested symptoms of the acute type of hog cholera after an incubation period of seven days. Three positive findings were made in the blood of this animal.

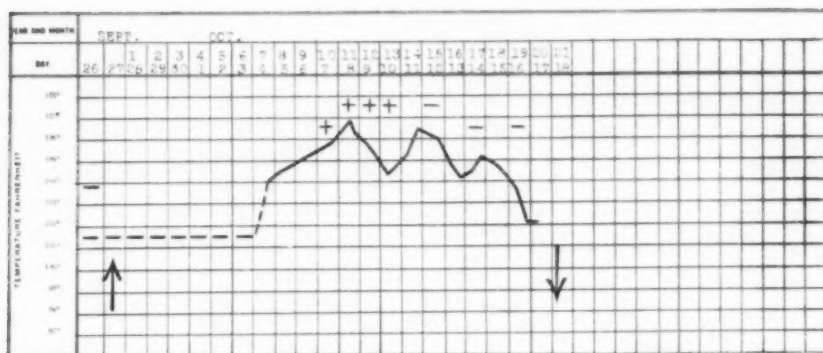
Hog No. 446. B.A.I. STRAIN OF VIRUS.



REMARKS: September 20. Animal inoculated with 3 c.c. from 444 (B.A.I.).
 September 27. Symptoms appeared.
 October 10. Animal moribund, bled and examined.
 Skin on ventral surface of body purple in color; hemorrhagic areas in subcutaneous and muscular tissues. Lymphatic glands enlarged and hemorrhagic. Kidneys show a few petechia, ulcers in cecum.

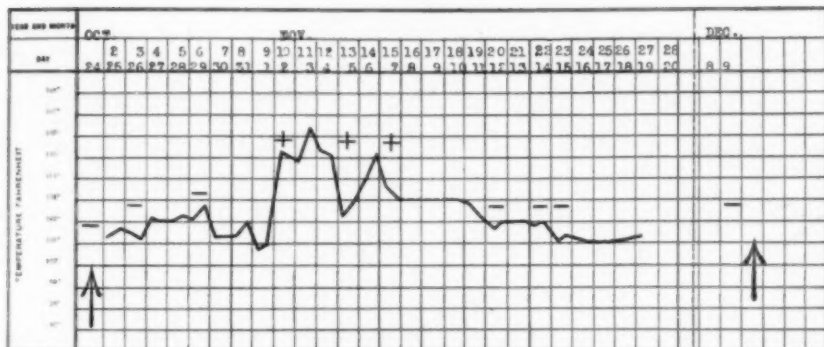
Results from the dark field examinations of the blood of Hogs 453 and 454 afforded most interesting data. Both of these animals recovered after a mild course of the disease following a relatively long period of incubation. As the symptoms

Hog No. 449. B.A.I. STRAIN OF VIRUS.



REMARKS: September 27. Inoculated with 4 c.c. B.A.I. virus.
 October 5. Symptoms appeared.
 October 18. Animal found dead.
 Purple hemorrhagic areas extending over greater portion of body externally and into subcutaneous tissue internally. Lymphatic glands enlarged and hemorrhagic. Ulcers in cecum. Kidneys petechiated. Areas of fatty degeneration in liver, right lung, upper lobe solidified.

HOG No. 453. B.A.I. STRAIN OF VIRUS.

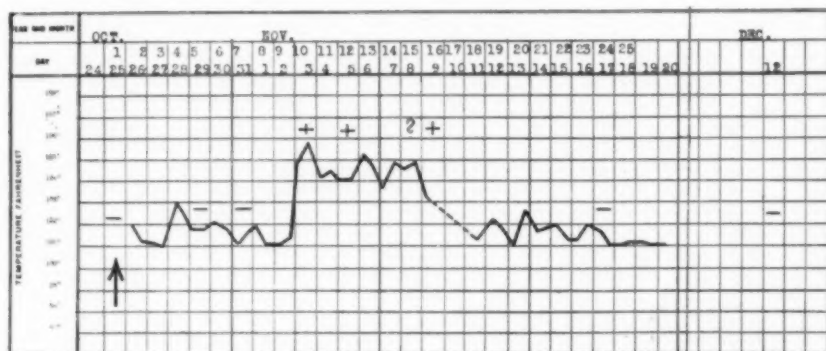


REMARKS: October 24. Inoculated with 4 c.c. B.A.I. (filtered virus, filtered through Berkefeld.
 November 2. Symptoms appeared.
 November 5. Blood positive.
 November 19. Animal recovered.
 December 15. Animal released, immune.

in both animals disappeared, dark field examinations failed to reveal the presence of the spirochete and the numerous characteristic granules. These hogs were kept under observation during a period of one month following recovery and were ultimately released as "immune."

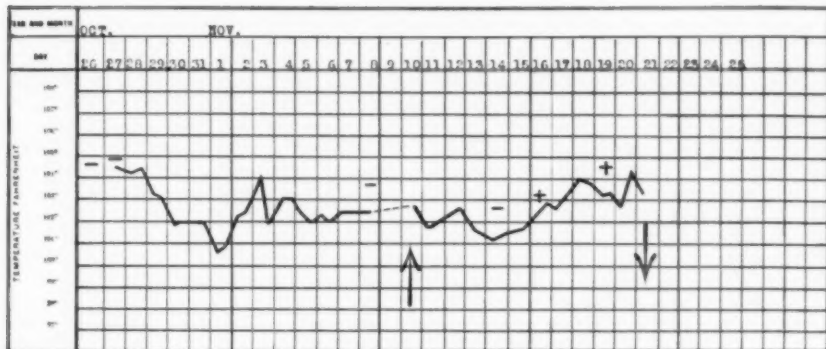
Hog 455 was kept in a separate room in the experimental

HOG No. 454. B.A.I. STRAIN OF VIRUS.



REMARKS: October 25. Inoculated with 4 c.c. B.A.I. virus (unfiltered).
 November 2. Symptoms appeared.
 November 19. Animal recovered.
 December 15. Animal released, immune.

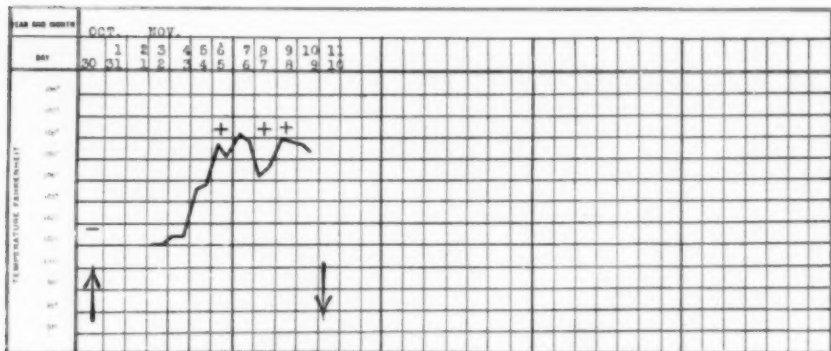
Hog No. 455. B.A.I. OR MICHIGAN (DEMERICK) STRAIN OF VIRUS.



REMARKS: Control. October 28. Appearance of "rash" on abdomen and flanks. Animal eats well and shows no symptoms of cholera. Diagnosed as parasitic skin affection.
 November 10. Recovering hogs (not dipped) 446, 447, 448 placed in inclosure with 455.
 November 16. Animal sick.
 November 21. Pig moribund, bled and examined.
 Typical lesions in cecum, lymphatic glands, and lungs.

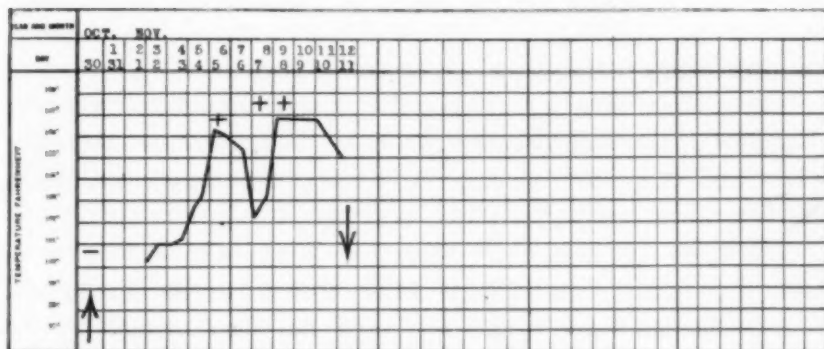
stable from October 26 until November 10 for the purpose of serving as a control on the methods used in isolating the experimental lots of hogs. During a part of this period Hog 455 suffered from a parasitic skin affection, but dark field examinations

Hog No. 506. B.A.I. STRAIN OF VIRUS.



REMARKS: October 30. Inoculated with 4 c.c. B.A.I. virus.
 November 4. Symptoms appeared.
 November 10. Animal found dead and examined.
 Cecum, lymphatic glands, spleen, kidneys, and lungs show typical lesions of cholera.

HOG No 507. B.A.I. STRAIN OF VIRUS.



REMARKS: October 30. Inoculated with 4 c.c. B. A. I. virus.
 November 4. Symptoms appeared.
 November 11. Animal found dead and examined.
 Lymphatic glands, cecum, lungs, kidneys, and spleen show typical lesions.

demonstrated a "clean" blood, free from granules and the spirochete. On November 10 the animal was exposed to the disease and developed symptoms in six days. His blood then showed positive findings and autopsy revealed lesions of cholera.

The charts of Hogs 506 and 507, inoculated with the B.A.I. strain of virus, need no further explanation.

Michigan (Demerick) strain of virus—On September 24, a farm at Roseville, Mich., was visited for the purpose of examining the herd of hogs. Several sick hogs of this herd, which had been isolated, manifested symptoms similar to those of hog cholera—malaise, anorexia, high fever, and diarrhea. A few purple areas were observed on the abdomen and ears.

With the permission of the owner two of the animals were bled from the carotid artery and careful examinations made. Typical lesions of hog cholera were found in the large intestines, lymphatic glands, lungs, kidneys and spleen, and a positive diagnosis of the disease in the acute form was made.

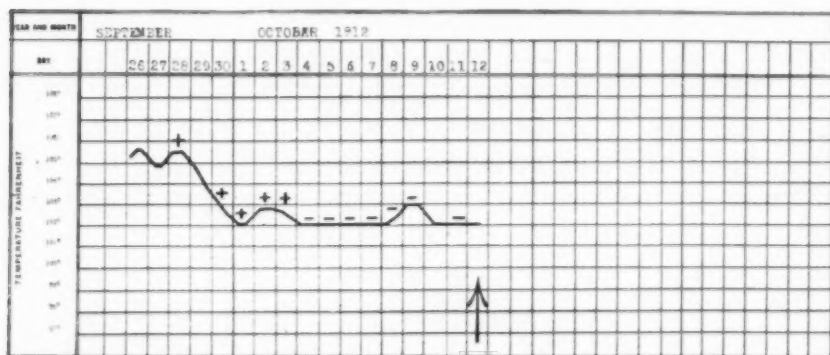
On September 26 two animals affected with hog cholera were brought to the laboratory. The blood of one of these hogs was examined immediately and the spirochetes were found with little difficulty. This animal was moribund, and was bled and ex-

aminated on the same day. The other hog, No. 448, ultimately fully recovered from the disease. An examination of the temperature chart of Hog 448 will show the logical results obtained from the study of his blood on the dark field.

Three hogs, Nos. 450, 451 and 452, were inoculated with the Michigan (Demerick) strain of virus. The results of the dark field blood examinations appear in the charts below and were clearly confirmatory of previous findings.

Michigan (Rochester I) strain of virus—On November 9, eight apparently normal pigs were received from Rochester, Mich. No particular notice was taken of these animals as the blood of other hogs suffering from cholera was at the time under close observation. The eight susceptible pigs were received in an isolated pen, at some distance from the experimental stable, and cared for by an attendant who never entered the experimental stable. This was the routine procedure when normal pigs were received.

HOG NO 448. MICHIGAN (DEMERICK) STRAIN OF VIRUS.



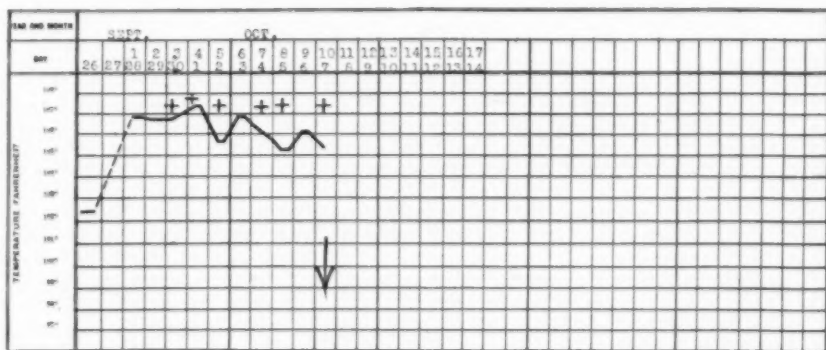
REMARKS: October 12. Animal fully recovered. Released as immune.

On the evening of November 12, Hog 503, one of the eight apparently normal pigs from Rochester, was removed to the experimental stable, inoculated with Michigan (Demerick) strain of virus and placed alone in a disinfected room. In this instance no dark field blood examination was made before inocu-

lation, owing to the lack of time. It was planned that the examination of the blood, for the purpose of control, should be made the next morning following the inoculation. Likewise no temperature observation was made until the next morning. On November 13, the day following the inoculation of Hog 503, the dark field examination of the blood revealed the spirochete. The organism was again found on November 14. At this time the temperature of the animal was 104.2° F. and it showed symptoms of hog cholera. An inspection of the remaining hogs of this lot, which were still in the isolated pen used for receiving susceptible animals, showed that practically all were suffering from the disease. Among the apparent symptoms were diarrhoea, anorexia and listlessness.

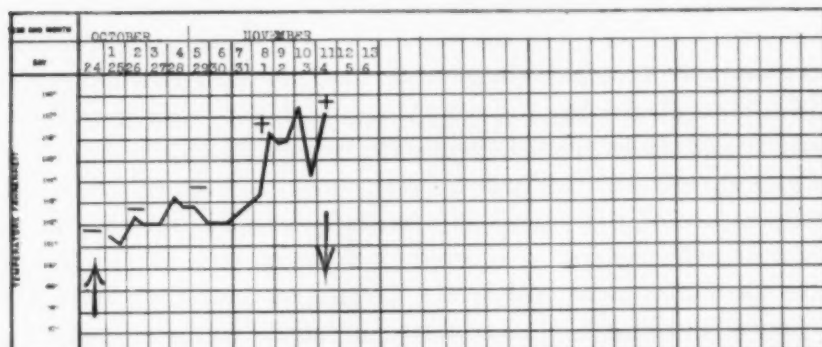
Mechanical error in clinical chart of Hog No. 450—Michigan (Demerick) strain of virus—the animal was inoculated on September 27th; on October 5th symptoms appeared. During the period between September 27th and October 5th no temperatures were taken of this animal and the temperature curve on the chart should begin October 5th and extend until October 14th, when the animal was found dead. The dotted lines should extend from

HOG NO. 450. MICHIGAN (DEMERICK) STRAIN OF VIRUS.



REMARKS: September 27. Animal inoculated with 4 c.c. Demerick virus.
 October 5. Symptoms appeared.
 October 14. Animal found dead and examined.
 Large areas of congestion and hepatization in lower lobes of both lungs, kidneys contain a few petechiae. Spleen enlarged and gorged with blood. Mucosa of large intestine congested. Lymph glands enlarged and hemorrhagic.

Hog No. 451. MICHIGAN (DEMERICK) STRAIN OF VIRUS.

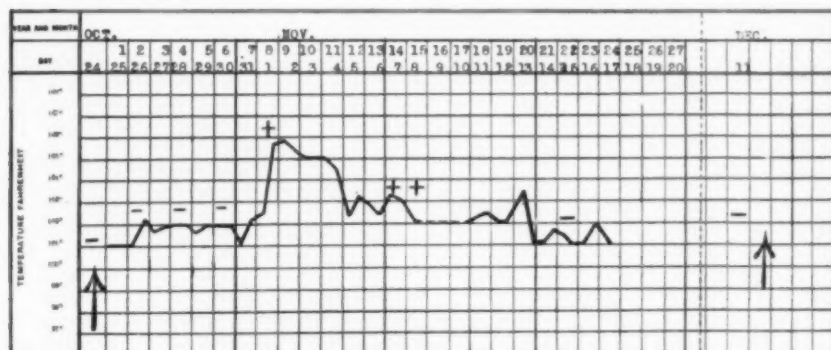


REMARKS: October 24. Demerick virus (filtered through Berkefeld).
 November 1. Symptoms developed.
 November 4. Animal found dead and examined.
 Lesions in lymphatic glands, spleen, lungs, and cecum typical of cholera.

September 26th until October 5th. The error is purely a mechanical one on the part of the individual who drew the graphic representations on the clinical chart.

Careful inquiry was made as to the source of this lot of pigs and it was found that they were purchased from a stock buyer, who had kept them for 10 days previous to receipt, in an en-

Hog No. 452. MICHIGAN (DEMERICK) STRAIN OF VIRUS.



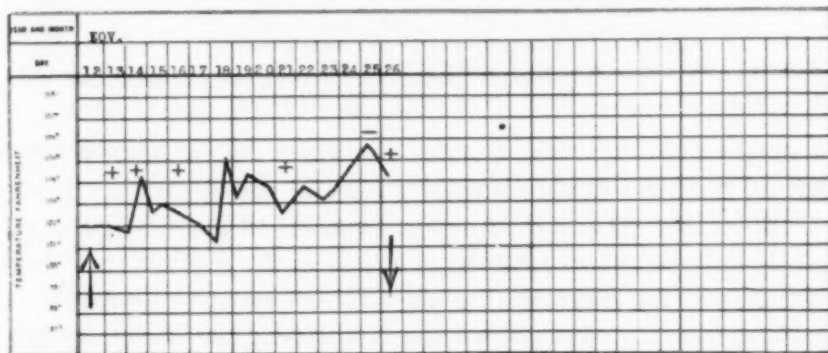
REMARKS: October 24. Inoculated with 5 c.c. of Michigan (Demerick) virus (unfiltered).
 November 1. Symptoms appeared.
 November 17. Animal recovered.
 December 15. Animal released, immune.

closure which received all hogs purchased. Thus, it was clear that these pigs had been subjected to one of the most common methods of exposure to the disease, and that an incubation period of 10 days had elapsed before they were delivered at the laboratory.

In this instance a diagnosis of hog cholera was practically made by means of the dark field.

The autopsy findings in Hog 503, which was bled two weeks after being taken under observation, could not consistently be

Hog No. 503. MICHIGAN (ROCHESTER) STRAIN OF VIRUS.



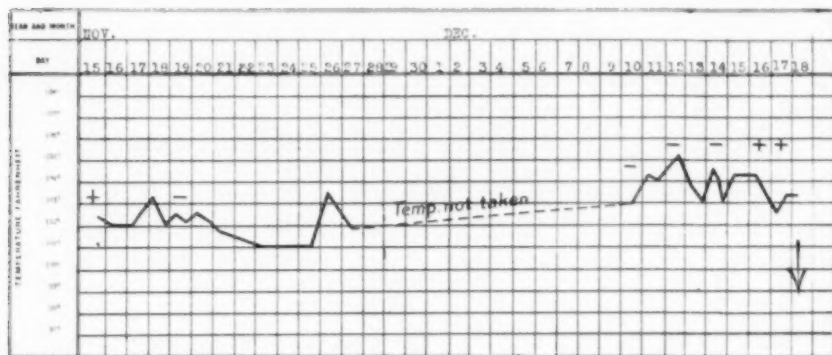
REMARKS: November 12. Inoculated with 4 c.c. virus from Hog 450 Michigan (Demerick) strain.
 November 14. Found pig showing symptoms. One of Rochester hogs.
 November 17. Typical symptoms.
 November 20. Typical symptoms.
 November 26. Animal moribund, bled and examined.
 Lymphatic glands, lungs, kidneys, and heart muscle show typical lesions.

used to verify the diagnosis of cholera in this lot of hogs, because of the fact that this animal had received an inoculation of Michigan (Demerick) strain of virus.

Hog 504 was killed and examined on November 16, after two positive dark field examinations were made. The lesions were not pronounced because of the fact that sufficient time had not elapsed for typical lesions of cholera to develop.

The disease in this lot was of the subacute or chronic type, as is shown by a study of the following charts of Hogs 505, 509,

Hog No. 505. MICHIGAN (ROCHESTER) STRAIN OF VIRUS.



REMARKS: November 15. One of Rochester pigs. Not inoculated.
 November 20. Symptoms of chronic type.
 December 10. Animal very weak and emaciated.
 December 19. Hog died on bleeding table.
 Lymphatic glands, heart muscle, lungs, kidneys and cecum show typical lesions of cholera.

510, 511 and 513. The clinical conditions and autopsy findings left no room for doubt as to the nature of the disease.

In further confirmation of the diagnosis of hog cholera in the above animals, when received at the laboratory, attention should be called to the chart of Hog 514. This animal remained in the isolated pen for susceptible hogs at the time the Rochester pigs were received. Hog 514 had been kept for a period of several weeks in the pen for "susceptibles" previous to this time and was in a healthy condition. The animal was not otherwise exposed to the disease, but promptly developed cholera about six days after the Rochester pigs were placed with it. The blood of Hog 514 showed the presence of the spirochete on three different examinations, and autopsy revealed typical lesions of the disease.

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(To be continued in next issue.)

THE CONTROL OF HOG CHOLERA BY SLAUGHTER METHODS.*

BY GEORGE HILTON, CHIEF VETERINARY INSPECTOR, OTTAWA, CAN.

This policy was inaugurated in Canada by Dr. Duncan McEachran more than twenty-six years ago, when preventive inoculation was unknown; and while it has naturally undergone certain changes, its more drastic provisions still prevail, it being found in the opinion of the veterinary authorities in Canada, the best means of combating the sporadic outbreaks with which we are called upon to deal.

As you are quite familiar with this method of controlling infectious diseases, I will not take up the time of this meeting by going into too much detail in dealing with this subject.

A glance at the annual reports of this association indicates that the control of this disease is a very live issue in your country. You have evidently given the question careful consideration, and you have fully discussed the more modern methods of immunization.

Although opinions may differ with regard to the most suitable methods of control, and existing conditions may make any method practicable or impracticable, it is generally admitted that the more drastic the measures the greater the success in reducing the number of outbreaks, and that the disease increases and decreases according to the strictness or laxity of any regulations governing the movement of hogs in infected districts.

In dealing with such a highly infective malady it is essential to obtain the co-operation of those whose interests are concerned, as otherwise the very important secondary factors in the spread of the disease would seriously interfere with control work. It is a very difficult matter indeed to deal with outbreaks in dis-

* Presented to the United States Live Stock Sanitary Association, Chicago, December, 1913.

tricts where the natural immunity of hogs has been overcome by improper feeding and filthy, unsanitary surroundings. Individuals who are content to raise hogs under these conditions are themselves a grave source of danger and require very careful attention.

All possible steps are therefore taken to enlighten the owners with regard to the nature of this disease. Copies of the regulations and hog cholera bulletins are freely distributed, and special care is taken to give clear and definite instructions.

The Canadian hog raisers, after years of education, are becoming accustomed to our methods, and the opposition which formerly existed is now seldom met with.

The necessary authority for adequate action in the enforcement of this policy is fully provided for by the Animal Contagious Diseases Act and the regulations made thereunder. Notification of suspected cases is made compulsory, and failure to report punishable.

We have found that in localities where the disease has been seen outbreaks are reported promptly, as hog owners naturally prefer to realize all they can on their infected stock, and as they are familiar with our regulations they fully appreciate that it is in their best interests to advise the Department directly they suspect the existence of this disease. They are generally very anxious to obtain the services of an inspector with the least possible delay, as they understand that compensation is not paid, under any circumstances, for hogs which succumb to the disease. Little difficulty is, therefore, experienced through owners concealing the disease and disseminating it by shipping hogs from infected farms.

In dealing with an outbreak, an endeavor is made to wall off the infected territory by prohibiting the movement of hogs from adjacent farms. The size of the restricted area naturally varies, according to the nature of the outbreak and the existing conditions.

The most serious outbreak with which we have had to deal occurred some years ago in Western Ontario. The conditions in

the infected territory were exceedingly favorable to the propagation of the disease, and it was necessary to prohibit the movement of hogs in a very large area. As this action seriously interfered with trade conditions, the shipment, under official supervision, of healthy hogs direct to abattoirs was permitted, and proper attention given to the cars in which they were conveyed.

A great deal of difficulty was experienced in controlling this outbreak, but this was finally accomplished and the spread of contagion to outside points prevented. It has since been possible to suppress outbreaks by the formation of infected circles of comparatively small areas.

Premises on which this malady is suspected, as well as adjacent ones, are promptly quarantined and measures taken to establish a diagnosis. Directly this is accomplished, all infected and contact hogs are slaughtered. The carcasses of the hogs which have shown evidences of the disease, together with all debris, are cremated, and when this procedure is impracticable they are covered with lime and deeply buried. The apparently healthy hogs are suitably slaughtered on the owner's premises, the carcasses carefully inspected and a license issued, permitting the removal for sale purposes of any which are considered wholesome. It is, however, not customary to remove the carcasses of hogs which have been in direct contact with those showing symptoms of the disease.

As soon as all carcasses and contact matter have been satisfactorily disposed of, the cleansing and disinfection of the premises is proceeded with; this is done under the supervision of the Veterinary Inspector in charge of the outbreak, and must be performed in a manner entirely satisfactory to him. Cheap, crudely constructed, insanitary hog houses are burned, while proper measures are taken to effectively disinfect the more modern structures. The yards to which hogs have had access are covered with lime and carefully ploughed under, and the trees in the orchards or yards, and fences, are also disinfected from the ground to a suitable height.

No hogs are permitted to be brought onto any farm until a

period of three months has elapsed from the completion of disinfection. At the termination of this period the inspector revisits the premises, makes a careful inspection and if satisfied forwards a recommendation for their release to the head office. Compensation is always withheld until this release is received and honored, and if the inspector's orders have not been carefully followed it is forfeited. Compensation is also forfeited in cases where the owner persists in feeding raw garbage after due warning has been given.

This provision was found necessary owing to the frequency with which outbreaks of this disease occurred in swill fed hogs, where the origin of infection could not be traced to any other source.

A maximum valuation of fifty dollars is allowed for registered pure bred hogs, and fifteen dollars for grades, the value in each case being adjusted by the inspector, whose decision is final.

During the first few years this policy was in force, compensation was paid at the rate of one-third of the appraised value for diseased hogs and three-fourths of the appraised value for healthy contacts. It was found, however, that this method of awarding compensation frequently resulted in friction, as it was often impossible to satisfy the owner that his hogs were actually diseased, unless the post mortem appearances were most pronounced. The necessary measures were therefore taken by Dr. Rutherford to have the Act amended. This was done in 1904, and two-thirds of the appraised value has since been paid for all hogs destroyed whether diseased or in contact, with the exception, of course, of carcasses which are considered suitable for food purposes.

This change has removed a great deal of friction which previously existed, has made the enforcement of the policy more practicable and has enabled the inspectors to gain the confidence of those interested in the hog industry.

I have briefly outlined the procedure generally followed by our field officers, but I would like to add that the strictest precautions are taken to prevent the spread of contagion in any known

manner. The usual measures are, therefore, followed by the inspectors with regard to their wearing apparel. Dogs on infected farms are chained, and steps taken to prevent traffic over contaminated ground.

In addition to the measures already mentioned, it is of course necessary to protect Canadian hogs from infection imported from other countries. A quarantine of thirty days is imposed on all swine imported from the United States, and these animals must be accompanied by a certificate of health from the district in which they originated. Inspectors are employed to superintend the disinfection of stock cars entering the country, as also to enforce our regulation that transit hogs passing through Canada are shipped in cars specially fitted with 10-inch foot-boards. Inspectors are also stationed at important interior traffic points throughout the country to ensure the proper cleansing and disinfection of all stock cars arriving either from your country or any part of Canada. This work is very closely supervised and has been so arranged that stock cars automatically cleansed and disinfected upon arriving at our important centres. Any cars which escape detention at any of these points are quickly caught at some other point, where the inspectors are located, and properly dealt with. Stock yards, chutes and other facilities required for handling hogs receive close attention. Experience has also rendered it necessary to prohibit the drenching with water of transit hogs while in Canada.

The prompt, effective destruction of the virus is of course the keynote of the whole situation. This, as you know, is an exceedingly difficult undertaking, owing to the strong resisting power of the organism outside of the animal body and the uncertainty which exists with regard to the many channels through which it may be carried.

The hog industry in Canada is receiving every consideration by the Federal Government and Provincial legislative bodies, as it has been found that the rapid increase in our population, due largely to the enormous development of our country, has resulted in the demand exceeding the supply. Our national produc-

tion does not meet our requirements, and the price of these animals has consequently attained an unprecedented figure.

All possible measures are therefore taken in our control work to prevent reckless destruction. With this end in view, all marketable hogs in the vicinity of infected centres are slaughtered and their carcasses utilized while fit for food purposes. This procedure assists materially in case an extension of the outbreak occurs, and also diminishes the loss to owners. We have found that an educational campaign is invaluable, and that directly the hog owners realize that their interests are being guarded they are only too willing to follow the advice of our officers. Little difficulty has, therefore, been experienced in reducing to advantage the number of hogs in any district when it is considered advisable to do so.

The number of live hogs in Canada during the past seven years, as shown by the census returns compiled on June 30th of each year, totals 22,040,000. During this period we have destroyed, in the enforcement of this policy, an approximate total of 17,950 diseased and in contact unmarketable hogs for which we have paid in compensation, \$107,260. We have, therefore, destroyed .081 per cent. of the 22,040,000 hogs, or 81 per hundred thousand, and have paid an average price of \$6 per hog. As the maximum compensation paid for grade hogs is \$10, the low average paid per hog, which includes the pure bred animals for which \$33 is allowed, indicates that the majority of the hogs destroyed were immature or of inferior type. If we figure the compensation paid on the total census stock, we find it has cost .48 of a cent, or practically half a cent per hog to protect our hog industry.

The hogs slaughtered yearly in the Dominion for food purposes must, however, not be overlooked. Our meat inspection records show that 8,600,000 hogs have been slaughtered in Government inspected abattoirs in a period of five years and seven months. It is estimated, however, that this service only covers about 50 per cent. of the hogs slaughtered, and it is therefore evident that there has been an approximate total of 17,000,000

slaughtered for food purposes in that period. By extending this period to seven years, we have an estimated total of 21,517,626 hogs slaughtered for food purposes. It will, however, be evident to you that a large percentage of these hogs could not have been included in the census returns. If, therefore, we include 50 per cent. of these animals in our figures, this policy will have cost the Canadian Government one-third of a cent per hog to control this disease.

I have not, of course, taken into consideration the expenditure incurred in the enforcement of this policy, as it is a common one necessitated by the maintenance of an adequate veterinary sanitary force essential to any country for the protection of live stock.

Our yearly returns naturally show considerable fluctuation; there are periods in which the disease breaks out suddenly in widely separated districts and becomes troublesome, and others when it seems to have almost disappeared.

There has been an increase in the number of outbreaks dealt with in the last few years. They, however, have occurred with few exceptions in districts where the disease had not previously been encountered.

Hog cholera broke out almost simultaneously in the vicinities of cities and towns in several provinces of the Dominion in 1911 and 1912, outbreaks occurring for the first time in Saskatchewan and Alberta. A very serious outbreak also occurred in Manitoba, in which province the disease had not been detected since 1889. A most searching investigation was made by experienced officers, who reported that these outbreaks were undoubtedly due to the feeding of raw garbage.

We have, with few exceptions, been able by energetic action to confine outbreaks to the districts in which they originated, as, owing to compulsory notification, prompt attention is as a rule possible.

Although carcasses entering establishments under inspection showing the slightest evidence of hog cholera are condemned by the Federal Meat Inspectors, they have only detected this disease on four occasions during the last five and one-half years.

By this means the possible dissemination of the disease, through feeding pork scraps in garbage, is practically eliminated. As large quantities of the American product are imported into Canada, we are glad to note, in a recent ruling of your bureau, that the same action will now be taken with regard to infected carcasses of animals slaughtered in your Government inspected abattoirs.

The compulsory slaughter and compensation policy has not by any means been a simple undertaking. The public, as you know, do not take kindly to drastic measures, and difficulties have therefore frequently arisen which have required diplomacy and tact. Under Dr. Rutherford's guidance, however, this policy has survived and our experience has shown that it gives an excellent opportunity to effectively dispose of known contact matter, removes the possible carriers, lessens very materially the period of the existence of the contagion and, therefore, enables the conscientious inspector to render the best possible service in eradication.

The conditions in Canada have, fortunately, been suitable for the effective enforcement of these measures, as the outbreaks have not at any time assumed an epizootic aspect.

You will readily understand, however, that in order to retain full control of the situation throughout the Dominion it is necessary to prevent the possible introduction of unauthorized methods of control. The importation, therefore, or manufacture, sale or use of hog cholera serum is prohibited. I can assure you, however, that while the circumstances, peculiar to our country, have necessitated this action, we are watching with a great deal of interest the results published from time to time by the many able and earnest hog cholera research workers in your country.

ONLY TRULY SCIENTIFIC VETERINARY PUBLICATION IN THIS COUNTRY.—An Alabama subscriber says, in renewing his subscription: "The REVIEW is the only truly scientific veterinary publication we have in this country."

HORSE BREEDING IN NEW JERSEY.*

BY M. A. PIERCE, D.V.S., PATERSON, N. J.

Any suggestion relating to improvement in the breeding of horses involves consideration, particularly of the sires in service, inasmuch as such individuals exert their influence through so many breeding matrons. The activities of the Live Stock Commission as the agency in New Jersey for promoting interest and activity in the feeding, breeding and management of live stock have been centered around definite purposes directed to eliminate the mongrel sire and to emphasize the importance of more rigid selection of the females. Our endeavors have been directed along three definite lines:

First: Toward disqualifying from service mongrel or unsound stallions that are lacking in either breeding or individuality or both—beasts that have failed to sire useful or marketable types.

Second: Toward unifying type by selection based on utility within the breed, rather than originating new breeds based on mere fad, fancy, theory or beauty.

Third: Toward organizing breeders' associations and creating live stock shows that will localize interest, stimulate activity, demonstrate principles, and combine efforts directed toward permanent improvement in the breeding, feeding and general management of pure-bred live stock.

The authority for such activity was outlined by the law establishing the Live Stock Commission as follows:

First: To purchase and maintain stallions of the draft and coach type for distribution and use in the several counties of the state through breeders' associations duly organized, which provided dams for breeding that conform to certain fixed standards of excellence.

* Read before the Veterinary Medical Association of New Jersey, at Trenton, January 8, 1914.

Second: To aid in the selection and distribution of breeding sires and dams of other classes of live stock.

Third: To constitute a Stallion Examining and Registration Board.

This system of personal examination of every stallion by the Examining Board has given most excellent results, and does away entirely with the objection always prevailing, more or less, when the stallion owner is permitted to obtain his certificate of soundness from his local veterinarian to be used as a basis for granting a license service certificate. Furthermore, owners of mares as well as the owners of stallions congregate at the place where the examinations are held, and are able to compare the stallions side by side, which inspections prompts the stallion owner to have his animal in the best possible breeding condition throughout the entire season. The Commission makes tours of inspection, and the Secretary's time for the most part is used in mingling with the stallion and mare owners in a united effort to encourage the breeding of mares to stallions closely resembling in type and conformation of that of the mares; and in this way the Commission is able to further pass upon the usefulness of the stallion as a breeding sire. In addition this regular and personal inspection makes it possible to weed out not only the unsound horses, but those whose colts are not uniform or of high order.

New Jersey is a small state, comprising twenty-one counties, and requires approximately fifty examinations by the Board each year, and while the practice might not be feasible in a larger state it seems to me that a state could be divided into sections, and provision made for individual examination by a competent Board of every stallion in the state. The results obtained thus far after five years of inspection and examination are decidedly encouraging.

At the outset many of the stallions were presented before the Board in miserable condition. Not only were many of them unsound, but they were poorly fed, their feet had been badly neglected, they were not accustomed to work or regular exercise, many of them having never been taken from the breeding

stall or yard after entering the stud. During the season of 1909, seventeen per cent. of the stallions examined by the Board were barred from service. During 1910 twenty per cent. were found to be unsound and were refused certificates, while in 1913 only eight and four-tenths per cent. were disqualified, and during this entire period many stallions that were in service previous to the enactment of the law were unsound by the farmers on general principles. Each year the Board has been able to note marked improvement in the general appearance, and the breeding condition of the stallions. Reports from practicing veterinarians in various parts of the state show that they have emasculated an unusually large number of undesirable stallions that were condemned by the farmer himself as not being worthy of presentation before the Board, let alone being used for public service. Further advice from the veterinarians was to the effect that practically all of the stallions that were rejected by the Board were unsexed. The owners presenting their stallions in poor condition were cautioned against repetition of such practice; were given advice as to the proper method of caring for, feeding and managing a breeding stallion, and requested to present the animal before the Board in better condition next year. The Board has been very rigid in the issuing of license service certificates to young stallions, and few owners cared to bother with the stud colt until three years of age if there was any question of not securing a license, due to their failure to qualify as to breeding and individuality, therefore only the very best stud colts were kept for the stud. Statistics were gathered at the time of each inspection to determine the number of mares bred; the service fee charged; whether or not the stallion was regularly worked or exercised; the number of living colts resulting from his previous activities, and the exact location of his field of service in the various counties, and whenever possible a list of the owners' mares bred to a certain stallion were secured to be used as a guide while inspecting the colts sired by this particular stallion. Within a short time information will be a hand suitable for publication giving in tabulated form valuable information relative to the

economy and usefulness of working breeding stallions, and the effect of such exercise on the character and number of the foals sired.

The legislation relative to the registration and licensing of stallions is very popular with the owners of commendable stallions, and enforcement of the law comparatively easy, inasmuch as the Executive Officer has the co-operation of licensed stallion owners, and it is almost impossible for the owner of a mongrel, unsound or disqualified stallion to obtain sufficient patronage, such as will tempt him to violate the law, and suffer the penalty provided for such offense. There was some objection among owners of stallions living in distant parts of the county where the examination was held in the central part of the county; the grievance being that it was a hardship to bring the animals so far for inspection, and the Board has found it advisable to hold two examinations in the larger counties, preferably one in the spring and one in the fall, which has almost entirely done away with the objection mentioned, and the owners are eager to present their charges before the Board.

The mere fact that this public assemblage of breeding stallions is largely attended by owners of mares as well as stallions is a good advertisement for the owner of a sound stallion presented in first-class condition, and likewise undesirable publicity for the owner of unsound or undesirable stallions; for comparison is made with those of superior conformation and more desirable qualities. In a great many instances owners of inferior stallions have had their animals gelded, as they did not care to experience the embarrassment of presenting their inferior stallions along with desirable stallions for official approval. This fact alone more than outwits any objection to the public assemblage of stallions resulting from owners living at a distance; and as the number of stallions increase, additional examination points will be added to the list by the Board.

The present framing of the law designates certain unsoundnesses and diseases that disqualify stallions from service. It is the judgment of the Board that it is equally important that stal-

lions of undesirable conformation, even though they are sound, should likewise be refused a license service certificate; for the presence of such defects as are noted on many of the stallions is far more objectionable than some of the unsoundnesses mentioned in the law that disqualify from service. In many cases the Board was required to issue certificates and commend stallions that were decidedly inferior in conformation and individuality, and possessed of defects that are known to be equally as transmissible as those specified by law; furthermore, such stallions while in service have failed to sire creditable foals. Unfortunately the Board is compelled at this time to license pure-bred or grade stallions that are sound, even though they lack individuality, and it is known that their colts are inferior. It is exceedingly difficult to convince the average farmer that a stallion possessed of the best breeding, and a sire of good colts, is unfit for service due to the presence of a light unsoundness as defined by law, while his neighbor's stallion being free from any of the unsoundnesses mentioned in the law possesses notable defects, is of relatively unknown breeding, and does not possess any commendable breeding points whatsoever, is worthy of a license. Therefore the Board is unanimously of the opinion that authority should be vested such as will enable them to recognize superior individuals of known usefulness, even though their breeding may be relatively unknown, and likewise to refuse a license service certificate to inferior animals regardless of their known breeding. It is doubtful if there is anything gained by defining certain unsoundnesses as disqualifying a stallion from service, for too many times it is a matter of judgment and individual cases require separate decision. The Board should be vested with authority to issue or refuse certificates as their judgment prompts after a careful examination and thorough investigation of each individual case.

As regards the selection of the females it would be safe in asserting that this is one of the big problems facing the eastern horse breeder. With the stallions owned by the state, many of the western bred mares proved to be shy or irregular breed-

ers; others were old and had not raised a colt for several years; while the greater portion of the local bred mares were of the roadster type, and not suited for mating with draft or coach stallions. With such specimens at hand it was easy to question the potency of the sire, especially in sections of the state where draft horse breeding was looked upon with disfavor by those accustomed to breeding for speed and beauty. Owners of such mares were irregular in returning their charges for re-trial or service, and in many cases expected far too much from the stallions in service while others used hasty judgment in condemning his usefulness. The old saying that "a lie will travel a mile, while truth is putting on its boots" must have originated in a horse-breeding district.

The Breeders' Associations were live wires in collecting suitable mares, and in several cases grouped their orders and brought in select individuals of known usefulness from adjoining states. Reports from secretaries show in several instances farmers disposed of three or four misfit roadsters, and purchased in their place two blocky, drafty mares. This exchange enabled them to accomplish far more farm work at much less cost for feed and care; moreover, there is much more pleasure in working two trusty draft mares than in worrying along with three or more light, flighty, nervous roadsters, as is the case when high-spirited animals are hitched to modern farm implements. There is also noted activity among farmers having suitable pasture land in purchasing draft weanlings and fillies, the object being to grow and develop them for breeding purposes under New Jersey conditions.

It is seldom that a single enterprise creates such universal interest and prompts so many followers as is the case with draft-horse breeding in our little state. Several importations of stallions and mares have been made by private breeders since the state's quota of sires arrived, and in other instances where stallions could not be supplied by the state, companies were formed which purchased stallions outright for use in their neighborhood. In addition to this activity among county or neighborhood organizations, individual farmers have purchased high-priced draft

sires for public service or private stud; while in many other sections of the state public-spirited citizens have contributed to the purchase and maintenance fund of imported sires offered for public service at nominal cost in their respective localities.

Nor does such activity subside at the mere instance of purchasing sires for stud purposes. Colt shows are promoted and liberal cash premiums, with appropriate cups or medals offered for the top notchers, with the result that the entries are numerous, the foals well grown, properly fed, and the young stock a real credit to the breeder. Any money over and above the amount needed for the actual maintenance of the stallion collected by the treasurer of the Breeders' Association is offered as premiums for the best colts sired by the stallion in service, while horsemen generally were eager to offer substantial prizes for creditable individuals. It has been said that this plan was paternalistic, and the legislation requiring inspection, examination and registration of stallions was interfering with personal liberties. In my judgment there is no ground for such assertions. Business enterprises of every nature are regulated by laws far more drastic than these proposed destined to eliminate serious drawbacks affecting live stock breeding. Distribution of stallions might not be feasible in a large state where the draft-horse industry is on a footing by itself. However, under the conditions that exist in New Jersey there is every reason to believe that the move was justified, and surely there has been prompt response from the breeders themselves in a united effort to produce the farmer's horse on the farm. Public sentiment strongly favors a continuation of the method of improvement, and I feel sure that steps will be taken at an early date, such as will stimulate activity in the breeding and selection of other classes of live stock as well. There is no room for doubt when consideration is given to the matter of registration and licensing of stallions. No one can deny the fact that it is a means of eliminating from service unsound as well as undesirable stallions, and while there is great room for improvement in the laws thus far enacted regulating live stock breeding, it is evident that forces that work will accomplish beneficial results. There is danger from too much legislation, but education knows no bounds.

THE CONTROL OF GLANDERS IN NEW YORK STATE.*

By J. F. DeVINE, CONSULTING VETERINARIAN, NEW YORK STATE DEPARTMENT OF AGRICULTURE.

In submitting the title of my paper to your secretary I advised him that my remarks would be confined principally to the title, since I consider that the history, distribution, cause and pathology of glanders have been sufficiently discussed for the time being, at previous meetings of this association. This paper will therefore be brief, with an attempt to explain the views and policies of our State Department on this subject, and with the hope of soliciting criticisms and aid on this perplexing problem from the able members of this organization.

We have recognized in New York State for some time that glanders was uncomfortably prevalent, both for human and equine safety and life. We have also felt that our knowledge of its dissemination and diagnosis was inadequate to set in force any radical system of control and eradication that would be equitable to the public and the horse owners, particularly where valuable horses are kept in great numbers, such as in New York City. We also recognized the fact that if we could control glanders in these large centers, its eradication in smaller towns and rural districts would be comparatively simple, as most every new outbreak in the latter places was traceable to one of the large cities. Some of the perplexing questions which were ever confronting us were: The accuracy of mallein if it indicated glanders, and does mallein detect all cases of glanders? Here, as in many other things, the efficiency and reliability of the human element were so interwoven with nearly every strand of the entire technique and deductions, that, after all, the findings of the reagent were dependable in every step upon "the man behind the gun," beginning with the selection of the culture and medium and not ending until the inoculation and observation of the equine animal in question were completed. I think we are all pretty well agreed that

* Presented at the meeting of the U. S. Live Stock Sanitary Ass'n, at Chicago, Dec., 1913.

where properly prepared, mallein, carefully and properly applied, positively indicates the presence of glanders, that a carefully conducted post mortem will, in practically every case, substantiate the verdict, and that any carelessness or inefficiency on the part of the one applying the test might make the results worse than useless; but even with the greatest care and skill, we were ever finding cases styled suspicious. These indefinite cases were constantly crippling the advancement of control work, embarrassing officials and honest veterinarians, as well as exasperating horse owners and being pleasing and useful to dishonest dealers and veterinarians.

When mallein had once been used we were not certain how soon the test might be repeated with any reliability, and with the advent of the serological tests the disadvantages of the indefinite results with mallein were lamentably increased, owing to the fact that after a few days following the injection of mallein into the animal body, it, like vaccine, produced or increased certain substances which we speak of as agglutins and anti-bodies, which in turn caused great confusion in the sera findings; and while McNeil, of New York City, states that mallein in a healthy horse will not produce more than a 2 plus complement fixation, but that vaccine is apt to give as complete a fixation as true glanders, still it seemed as if the blood examinations were doomed to lead us into greater darkness. There was still another phase of this problem viewed from economy; that was the proper disposition of the highly suspicious and positive reactors that exhibited no evidence clinically of the disease, it being the opinion of some that nearly every positive reactor, let its physical condition be ever so fine, was always a dangerous animal at some time, and the chances of such animals entirely recovering and forever ceasing to spread virus were highly improbable. I confess that from practical observation I am not entirely converted to this doctrine; but from post-mortem observations I am forced to conclude that, with rare exception, attended with unusual circumstances, it is false economy to delay the destruction of a horse in which glanders has been clearly diagnosed.

After giving all these questions careful consideration, and being encouraged by the advancements made in sera test work, particularly the complement fixation, the Department of Agriculture, in co-operation with the New York City Health Department, decided to make careful observations on the reliability of the complement fixation test, supplementing it with either the ophthalmic or subcutaneous mallein test, or both, and verifying the results where glanders was indicated by post-mortem examination. The errors in technique in both the field and laboratory were carefully watched and checked, with the result that after we had received assurance from the City Health Department that they would adopt a system of licensing all stables in New York City where equine animals are stabled, thereby insuring proper sanitary supervision of all stables and the closing of others as undesirable, as well as establishing a disinfecting corps under official veterinary supervision and the enforcement of the city ordinance of tagging all horses sent to the dead dock, so that in case animals dying from accident or disease other than glanders should be found to be affected with glanders, the stables from which such animals came might be located for further necessary inspection, we felt justified in submitting the following recommendations to the Commissioner of Agriculture:

First: That prompt and positive action be taken in all cases where glanders is clearly diagnosed, and that such animals be promptly destroyed or held under strict quarantine.

Second: That we favored the complement fixation blood test, since after the first few days of infection we believed definite results more constant during the entire course of the disease than with the agglutination, and more certain of detecting all cases of glanders than any other known test, and that where this test indicated a four plus reaction, supplemented by a corroborative ophthalmic reaction, such animals should be considered as positively glandered.

Third: That a capable veterinary pathologist be placed at the dead dock to autopsy all equine animals brought there, for reasons stated above.

Fourth: That both the State Department of Agriculture and the City Health Department co-operatively extend the present method of inspection, by careful examination of all known exposed equine animals in any stable where a glandered animal is found, with a view of determining whether or not such animal or animals are affected with glanders.

Fifth: That every animal so examined shall be identified by a tag, cord with a seal, or any other practical method of satisfactory identification, and that a record be kept of such examination, and that character of examination by both the State and Health Departments, and the reinspection of such animals, be made at such time or times as these departments deem wise or necessary.

Sixth: That this work could be carried on with greater efficiency if the use of mallein and vaccine were restricted, for the present at least, to official veterinarians, or if by others, to be used in co-operation with an official veterinarian.

Seventh: To prohibit the use of vaccine, mallein, or the application of any agent or substance that could act or interfere with the accurate results of mallein or sera-mallein tests, except under official direction.

These recommendations were approved by the Commissioner of Agriculture and have gradually been put in force during the past three months, and while all detail is not as complete as we hope to have it after a little more experience, we were greatly gratified with the report of the special committee of the American Veterinary Association on the detection of glanders, presented at the annual meeting, September 2, 1913, as it substantiated in practically every detail our recommendations and policies. I here quote that report, in part:

"APPEARANCE OF THE REACTION OF THE VARIOUS TESTS AFTER
INFECTION.

"Agglutinins reach their appearance in from 4 to 5 days and continue to increase in the early stages of the disease and diminish as the disease becomes chronic.

" Specific amboceptors of the complement fixation test may be demonstrated in from 7 to 10 days in quantities of diagnostic value, and their presence may be demonstrated during the entire course of the disease.

" Subcutaneous mallein test may, as a rule, be relied upon 15 days after infection.

" Ophthalmic mallein test may be relied upon 3 weeks after infection."

" The ophthalmic test not only meets all these requirements, but is without doubt the most convenient diagnostic method at our command.

" Its reliability compares favorably with any of the other available tests.

" The reaction is usually distinct, and doubtful or atypical reactions are rather infrequent.

" The ophthalmic test does not interfere with subsequent serum or other mallein tests if such are deemed necessary.

" The test may be repeated within 24 hours on same or control eye, and final retest in not less than three weeks.

" The ophthalmic test should be recognized by state and federal authorities, since its reliability can no longer be doubted.

" In all atypical and doubtful cases of the ophthalmic test the combined complement fixation and agglutination or subcutaneous mallein tests should be utilized for confirmation. Such a procedure should minimize the failures and assure the best results in the control of the disease in a single stable or in an entire community."

" *Effect of One Test on the Others.* All blood serum tests are influenced in 3 to 6 days after a subcutaneous injection of mallein or any glanders antigen, including glanders vaccines, for a period varying from 6 to 8 weeks following injection of mallein and up to 3 months and even longer following injection of glanders antigen or vaccines. All blood samples therefore should be taken prior to or at the time of the mallein injections.

" The subcutaneous mallein test or injection of glanders antigen and vaccines may influence the ophthalmic mallein test.

The ophthalmic mallein test should therefore be withheld for 30 days after application of the subcutaneous mallein.

Control. In the reduction of glanders all clinical cases should be immediately destroyed. All suspected and exposed animals should be tested and the positive reactors destroyed. The remaining contact horses held under restrictions subject to further test after the expiration of at least 15 days. All infected premises should be thoroughly cleansed and disinfected."

In conclusion I will give you the results of our short experience in this special effort to control glanders, with particular reference to New York City. While I have brought with me data covering details of each animal inspected, I have not incorporated it in this report, since, in my opinion, it would only add to the burden of printing and reading, without adding useful information. I therefore give the summaries, and will be glad to furnish a copy of detail to anyone sufficiently interested to request it.

SUMMARY.

Number horses examined.....	776
Number rejected: As result of examination.....	412
Number re-examined	57
Number rejected as result of re-examination.....	12

Examination—

Number diagnosed by clinical symptoms.....	171 cases
Complement fixation	302 cases
Agglutination test	398 cases
Ophthalmic test	237 cases
Mallein test	293 cases

The four last-mentioned methods were duplicated in practically 400 out of 600 cases where it was necessary to apply tests, until confidence was established in a 4+ blood reaction. Most cases are now unhesitatingly destroyed on a 4+ reaction. The exceptions being where the owner or his veterinarian are not

sufficiently acquainted with the accuracy of the complement fixation test; and perhaps the splendid physical condition of the animal argues against the blood findings. Such cases as well as cases where the blood reaction is indefinite are held in quarantine for further examination either by retaking the blood or supplementing one of the other tests or both. This is comparatively easy under our tagging system.

Re-examination—

Number diagnosed by complement fixation in . .	22 cases
Agglutination test in	16 cases
Ophthalmic test in	4 cases
Mallein test in	48 cases

Here again two or more methods were used in some cases.

Results of Post Mortem: Generalized cases, 259; non-generalized cases, 147; no-lesion cases, 3; clinical cases killed and no post-mortem report made, 15.

PERIODICALS RECEIVED AT THE REVIEW OFFICE.

Semi-Monthly Bulletin—Live Stock Sanitary Board (Penn.)
 Bulletin Washington State Agricultural College.
 Canadian Medical Association Journal.
 Quarterly Bulletin—Chicago Veterinary College.
 The Bacterial Therapist.
 The Veterinary Journal (London).
 The Live Stock Journal.
 The Pacific Dairyman.
 Hoards Dairyman.
 Farmers Advocate.
 The Breeder's Gazette.
 The American Journal of Clinical Medicine.
 The Cornell Veterinarian.
 The Philippine Agricultural Review.
 The Agricultural Journal (South Africa).
 The Rider and Driver.
 The Annals of Surgery.

The Veterinary Alumni Quarterly (O. S. U.)
 New York University Calendar (Weekly).
 The Philippine Journal of Science.
 Memoirs of the Department of Agriculture in India (Veterinary Series).
 Proceedings Washington State V. M. A.
 Proceedings Colorado State V. M. A.
 Announcement Kansas City Veterinary College.
 Second Report Commission on Milk Standards, U. S.
 Public Health Service.
 Annual Report Inspector of Animals, Lawrence, Mass.
 Our Dumb Animals.
 Journal of Experimental Medicine (Rockefeller Institute, New York).
 Experiment Station Record, U. S. Dept. Agr.
 Veterinary Notes.
 Expt. Station Report, Massachusetts.

BELIEVES IT GROWS BETTER ALL THE TIME.—A Kentucky subscriber, in renewing, says: "Could not practice without the REVIEW, and I do believe it grows better all the time."

OPERATION FOR INTUSSUSCEPTION OF ILEUM IN COW.*

By JOHN K. BOSSHARDT, D.V.M., CAMDEN, N. Y.

Definition—Telescoping—Invaginating: Intussusception is a sudden narrowing or closure of the intestinal passage due to telescoping of one part of the intestine into another, which results in a venous stasis of the telescoped parts.

Occurrence: This is not a frequent condition, but it occurs chiefly in cattle and in the dog, rarely in horses.

Etiology: This condition may come about when a portion of the gut contracts somewhat more powerfully than usual, due to some cause or other, and remaining somewhat longer contracted—it slipping into the posterior portion of the bowel that is wider in lumen at the present time. When the circular muscles of the intestinal tube contract, this becomes narrower, but is elongated, and when the longitudinal muscles contract, it becomes wider but shorter.

Since peristalsis is a wave-like motion of the intestines from before backward, brought about by alternating contractions and relaxations of the longitudinal and the circular muscles, some causes favor the entrance of an anterior portion of the gut that is contracted circularly into the next part of the continuous tube contracted longitudinally.

Even in normal peristalsis invagination may occur, but is reduced again if contractions do not continue.

Stationary telescoping occurs only in abnormally active and energetic contractions. Therefore anything influencing peristalsis may influence the occurrence of invagination.

Frozen grass, roots, ice-cold water, intestinal catarrh, enteritis, or the presence of parasites, foreign bodies or intestinal tumors or constrictions. In antiperistalsis the same thing may

* Presented to the Central New York Veterinary Medical Ass'n, at Syracuse, Nov., 1913.

occur, the posterior portion however entering into the anterior one.

Pathogenesis: Whenever a part of a gut enters into another, it necessarily takes along its mesentery. This results in stasis, causing swelling and serosanguinous infiltration of the inclosed parts. Some of the infiltrating liquid passes through the membranes into the intestinal canal and into the space between the serous coverings.

The rapidly increasing venous hyperemia causes intense and sometimes cramp-like contractions of this part, which are manifested by intense pain and may cause the part to invaginate still more.

Peristalsis is increased in the anterior part of the intestines with moderate pain, while in the posterior part it quiets only after the invaginated part has ceased to contract due to paralysis, necrosis or inflammation. Peristalsis will persist in anal parts because the motion is transmitted to it from the part invaginated.

These contractions, even if very weak, will move the serous or bloody exudate into posterior parts.

The intestinal bacteria escaped with the exudate into the abdominal cavity may be the cause for a peritonitis. Toxins may be absorbed into the general system and cause a general inflammatory condition or infection.

It is believed that in a few cases the invaginated parts sloughed off and an recovered.

Anatomical Changes: The invaginated parts form sausage-like, firm, fluctuating, straight or twisted cylinders of blue or bluish-red color and are usually painful upon pressure. Parts may be released with little effort.

Symptoms: Usually sudden, colicky pain, continuous from start to finish, or after pauses, according to the contractions. Kicking with the hind legs at the abdomen, as in strangulations of the bowels. Looking at right flank, laying down and getting up; restlessness, shaking of the head, etc.

Restlessness ceases after 6-12 hours, peristalsis diminishes, animal is not bloated or only moderately so. Feces are passed

only for a few hours after onset and then cease entirely. Straining considerably. Only a few more feces, but considerable mucus or slimy exudate is discharged.

Rectal examination usually reveals a painful, sausage-like mass; rectum is empty, but sticky with slimy discharge. Appetite is entirely wanting, animal soon becomes weak, eyes sink in, and an animal is ganting up rapidly.

The pulse soon rises to 120-130, and peripheral parts become cool. Temperature usually is not high.

Duration: From 6-9 days to 2 weeks. Recovery in some cases where parts slough off if stenosis does not follow.

Diagnosis: Only positive upon findings of a rectal examination. In rare cases the passage of pieces of the gut in the later stage assures diagnosis. Bloody feces mucus or fibrinous discharges in concert with signs of stenosis of the gut and general symptoms only *permit of the suggestion of the condition*. Exploratory laparotomy not dangerous and probably only method for detection.

Differential Diagnosis: Impaction of small intestines of color. Parts are felt hard or doughy, of inelastic consistency, not painful and their surface is uneven. Uterus is of small intestine.

Membranous Enteritis: May reveal thick, painful, elastic loops, but signs of stenosis are absent.

Stenosis due to clotted blood or twist are difficult to diagnose, which however would not matter, since the gravity of conditions are equally serious and procedure the same.

Torsion of uterus in pregnant animal must also be considered.

Operation: Patient may be given chloral hydrate \mathfrak{J} i-ii dissolved in H_2O by mouth, or Fl. Ex. Belladonnæ \mathfrak{J} iii-iv, if standing in stanchion and the light is sufficient. Have at least two men to assist you (their hands ought to be clean).

Instruments: Razor, scalpel and artery forceps; Two pieces of cloth 2 feet long, 2 inches wide; catgut and needles; two pails of hot water and salt, viz., one teaspoonful to one quart; one smaller dish or pitcher; wash-dish and soap and water; one dish

with an antiseptic solution; several clean towels; ropes for hopping or for slip-noose above hock if in stanchion.

Treatment: 1. Operation: (a) Explor. lap; (b) reduction; (c) resection.

2. NaHCO_3 $\frac{3}{5}$ 25 in H_2O , followed by HCl solution, diluted. Hold hand over anus to prevent CO_2 from escaping.

Proceedings: Prepare field of operation in right flank and make incision 5-6 inches long. Introduce left hand along the mesentery of the double colon backward toward pelvis and palpate for small intestines or for part previously felt by rectum. Grasp it gently and deliver it from the abdominal cavity. Draw apart and examine closely. If necrosis has set in and perforations are present, decide to remove all the affected portion. Squeeze fecal or other contents into the parts intact anteriorly and posteriorly to amputation or resection. Wash the parts with salt solution. Let assistant hold the parts with a towel soaked with warm salt solution. Separate the mesentery posteriorly at the point of resection for about two inches. Then take your narrow strip of cloth or bandage two feet long and tie it around the gut, firm enough to permit no intestinal contents to discharge. Let one assistant then hold the two ends of the cloth. Proceed likewise over anterior part. Then separate the entire mesentery from part to come off, and after that resect the gut. Grasp the mesentery now into a bunch and tie a catgut around so as to hold it together. Have a needle at end of catgut and stitch across to prevent the catgut from coming off.

Now cut the gut to come away about $1\frac{1}{2}$ or 2 inches from where it is tied; clean parts off with salt water and begin sewing the ends together, employing catgut and making Lembert's suture, viz., to bring the serous surfaces together. Be very particular that the sewing is done well and especially at the mesenteric border. Remove cloths and see if any material oozes through. If so, grasp some serous membrane on each side of suture and suture it over. Then suture the mesentery to the dorsal part of the gut, or rather to its serous membrane sleeve. Wash parts clean of blood with salt water and return to abdominal cavity.

Suture peritoneum and muscles with catgut and use silk or other strong sutures for skin.

The passage of feces may occur after 4-6 hours, with gradual return of appetite and recovery.

Guittard, a Frenchman, states that the operation is an everyday affair in his country.

MINNESOTA STATE LIVE STOCK SANITARY BOARD.—At a recent meeting of the Minnesota State Live Stock Breeders Association the secretary of this association, who is at the same time Professor of Animal Husbandry at the State Agricultural College, was, under a new law, elected to membership on the State Live Stock Sanitary Board as official representative of Minnesota Live Stock Breeders. His connection with the State Agricultural College and Experiment Station should result in still closer harmony and co-operation between the three bodies interested and give the sanitary board direct organization with and the backing of both the State Live Stock Breeders Association and the Agricultural College and Experiment Station of the State University.

Dr. M. H. Reynolds has represented the Agricultural College and Experiment Station on this board from its beginning. For several years those who have been especially interested in this work have worked toward harmony and co-operation and there appears to be in Minnesota a very pleasant spirit and unusually satisfactory condition so far as harmonious co-operation between Agricultural College, State Agricultural Society, Live Stock Breeders Association and the State Live Stock Sanitary Board.

This recent move on the part of the Breeders Association must necessarily strengthen the work and further the movement toward harmony and united effort.

SPECIAL COURSE FOR LICENSED VETERINARIANS.—In our December issue, on page 329, we announced a special course at the School of Veterinary Medicine, University of Pennsylvania, under the above heading, and were pleased to learn from a Philadelphia veterinarian on the 8th of January that 79 veterinarians from all over the country had responded to the call, and were at that time taking the course.

BOVINE COCCIDIOSIS.

By H. B. F. JERVIS, HOULTON, ME.

During the present month, November, a client from some distance came to me with the following tale of woe.

Out of a herd of about seventeen head of cattle, ranging from calves to aged cows, four yearlings had recently died, following an illness of short duration, with dysentery, blood being passed with fluid faeces. At the time of the interview he also had a cow just coming along in precisely the same way as the dead yearlings had, and he was very much afraid that she would not last more than a few days at most. He had made a diagnosis himself after the yearlings had died, viz., Paris green poisoning, he having remembered that early in the fall about a pail and a half of the latter, in solution, had been spilt in the basement of the barn.

On the appearance of identically the same disorder in the cow, which positively had had no access to this basement, he was "up a stump," and began to fear that a neighbor with whom he was on by no means good terms had been poisoning his herd.

I at once thought of coccidiosis and requested him to send me a sample of fresh faeces from the above mentioned cow as soon as he reached home. This he did, the faeces arriving at my office the following morning. On making smears from the fluid faeces, and blood coagula, and shred of mucous, I had no difficulty in finding vast numbers of round and subspherical oocysts of a coccidium.

This left no doubt as to the trouble, viz., "red dysentery," "coccidiosis intestinalis," etc., etc., so well known in certain European countries. To the writer's knowledge, no previous reports of this disease have been made from this quarter of the globe, and in reporting it he has nothing new to bring forth in regard to it but does so purely as a matter of interest.

In regard to the dimensions of the oocysts found in this instance, they ran from 16 to 18 microns in their long diameter, whilst a very few ran to 20 microns.

The writer, in 1909, had the privilege of making a quite extended study of coccidiosis of rabbits, caused by the coccidium *caniculi*, under that eminent scientist, Prof. Sir John M'Fadyean, in London, and from notes taken from lectures by that gentleman we shall draw very fully as to the development of coccidia.

Coccidia.—The coccidia belong to the sub class of sporozoa of protozoa, or unicellular protozoa. They are microscopic bodies, ovoid, round or sub-spherical. One can distinguish in them two poles, one rounded and the other rather flattened at its apex. They are limited by a thick, double contoured envelope, which is somewhat reduced in thickness at the centre of the blunt pole. Inside this envelope are found the contents, which are granular in character and which nearly always fill up the whole interior, with the exception of a space at either pole, which is seemingly filled with a colorless liquid. A nucleus can usually be plainly distinguished. The coccidia found in the intestines are already fertilized female parasites. In appropriate circumstances, after they have been expelled with the faeces, these fertilized female parasites, or oocysts, produce 8 sporozoites in the following manner:

The central contents divide into four bodies which are called sporoblasts. Each sporoblast changes from a round to a hair shape and provides himself with an external resistant envelope, and this becomes a cystospore. Each cystospore develops within its interior two somewhat comma shaped bodies, and these are the sporozoites. The disease is spread by healthy animals taking in with the food oocysts in which the process of sporulation has been completed. When the oocysts reach the intestine, the sporozoites escape from the cystospores, and in virtue of their power of movement they each pick out an epithelial cell, either of the intestine or bile duct. After penetration, each sporozoite rounds itself up and begins to live at the expense of the cells.

The sporozoite has now been turned into a trophozoite. The

trophozoite continues to grow, and its nucleus undergoes repeated division and has now become what is known as a schizont, and its protoplasmic substance falls into as many pieces as there are young nuclei in it.

In this way there is found a variable number of comma-shaped nucleated bodies, not unlike the sporozoites, and they are termed merozoites. The process by which they have been formed is an asexual one, and is called schizogony. The first generation of merozoites, when set free, seek out a new epithelial cell, and repeat the process of schizogony, and this process is repeated in the asexual way for an indefinite number of generations. After a time, some of the merozoites instead of becoming schizonts are set aside to take part in a process of sexual generation, or sporogony. Some of the merozoites develop into oocysts, and while they are undergoing this process they are known as macrogametes. Other merozoites develop into what are called microgametocytes, and these are the large cells, or coccidia, which fall into a multitude of motile bodies known as microgametes, and these correspond to the spermatozoa of the higher animals, and the macrogametes are fertilized by the penetration of one microgamete into them. A microgamete may be found as a motile body in the intestinal contents. It has a body substance which is in the form of a curved rod, and has two long flagella, by the active movements of which it is able to pick out ripe macrogametes.

Historical.—Zurn (1878) was the first who found coccidia in the intestines of a calf. In 1892, Zschokke pointed out the etiological relation between coccidia in the intestines and red dysentery.

The parasite was first discovered by an English doctor by the name of Hake, in 1839, but for a number of years its real nature was not known. They were looked upon by many as the eggs of some worms. In 1842, certain oval parasites of fishes were discovered and called psorosperms, and in 1845 Renak suggested that the objects first discovered by Hake were of the same nature.

Occurrence.—The disease usually occurs during the warm weather, and especially in wet years, though it may be observed

in the fall or even winter. In this region we have had a particularly wet fall.

Symptoms.—The disease begins with diarrhea, and shortly the feces show an admixture with blood and mucous. The feces are fetid and have been described as having a cadaverous odour. Intense tenesmus and even prolapse of the rectum may appear.

The younger the animals, the more fatalities are met with. The animals rapidly fall off in condition, and often die in convulsions. The pulse and temperature gradually rise, the animal shows staggering gait, deeply sunken eyes, and finally dies from prostration.

Course.—The acute course runs from five to ten days, but occasionally an animal dies in twenty-four hours. In mild, favorable cases recurrent attacks are not infrequent, but they usually take a benign course.

Diagnosis.—The occurrence of the disease during the time that animals are pastured, the fact that the majority of animals affected are young, hemorrhagic diarrhea, and rapid emaciation and finally the finding of the oocysts, microscopically, makes the diagnosis easy.

Treatment.—Bring the animals in from pasture and put onto dry feed. Disinfectants such as creolin and lysol have been used and recommended from ages past.

If complete anorexia be present the animals must be drenched with sustaining agents. From a prophylactic point of view the animals must be debarred access to dirty or stagnant water, such as one finds in boggy or marshy land. Healthy animals, at the appearance of the outbreak, should be brought up from the pasture to the barn and fed on dry food. Infective feces can be made sterile by soaking in solution of sulphuric acid. In the seemingly mild cases the administration of eggs beaten up and other demulcent agents tend towards recovery.

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TETANUS.*

BY DR. M. D. DE TURK, OLEY, PA.

This disease is described as a rigid spasm of the muscles of the body, both voluntary and involuntary.

Etiology.—This disease is caused by a bacillus that is found in the soil, in manure and in dust. This germ is anaerobic, grows only in the absence of oxygen. It produces a powerful nerve poison, which causes the symptoms of tetanus. This germ is drum-stick shaped, with the spore in one end. The germ itself multiplies at the point where it is introduced, but its poison is absorbed, and is carried by the blood to all parts of the body, and thus the nervous system is poisoned. Deep wounds infected by this germ are more dangerous than superficial wounds, because in them the germ is more remote from the oxygen; hence nail pricks, etc., are especially dangerous. Horses with a nervous, excitable disposition are more predisposed than those of a more sluggish nature. The period of incubation of this bacillus is very indefinite, from twenty-four hours to several weeks. All animals are subject to this disease, but it is more common in the horse than in all the other genii put together. Different parts of the body are affected.

It is called *orthotonos* when the whole body is affected, *trismus* when only the masseter muscles are affected, *tetanus laterolis* when one side of the body is affected most, *opisthotonos* when the upper side of body is most affected, *emprosthotonos* when the body is generally affected. *Orthotonos* and *trismus* are usually the most common.

Scmeiology.—The attacks may be acute or sub-acute. The first symptoms which attract attention of the owner is difficulty in chewing and swallowing, an extension of the head and protrusion over the inner part of the eye of the membrana nictitans, inability to open the jaws to their full extent, endeavoring to do so will produce great nervous excitability and increased spasm

* Read before the Schuylkill Valley Veterinary Medical Association.

of the muscles of the jaw and neck. The muscles in general usually becoming rigid. The slightest noise or disturbance usually causes the animal to become greatly excited. The tail is usually elevated and held immovable, the bowels become constipated early in the attack. The temperature and pulse are usually not changed. Acute symptoms become rapidly aggravated until in a state of tonic spasm, a cold perspiration breaks out on the body; the breathing becomes painful from the spasm of the muscles used in respiration; the jaws are completely set, eyeballs retracted, lips drawn tight over the teeth, nostrils dilated, and the animal presents a picture of extreme agony. In the latter stages the pulse then becomes quick and hard. In the sub-acute cases the jaws may never become entirely locked; the nervous excitability and rigidity of the muscles are not so great. All the symptoms may gradually increase in severity for a period of ten to fifteen days, and then gradually diminish under judicious treatment:

The *desire* for food and water remains good. When death does occur it comes through one of two channels: *First*, contraction of the heart, causing syncope; *second*, contraction of the muscles of the throat, and he dies from asphyxia. Death *usually* occurs in from two to ten days.

Prognosis.—If the animal is able to eat and drink a little from time to time, and you can keep bowels moving, you may have a recovery, but if all the severe symptoms are present, then you have a stubborn case in hand.

Prevention.—Where a valuable horse has sustained a wound that it is feared may be followed by tetanus, it is well to administer a dose of tetanus antitoxin. This is injected beneath the skin with a hypodermic syringe. A very high degree of protection may in this way be afforded.

Treatment.—From the nature of the case it is easy to see there is no specific. The animal should be placed in a box stall without bedding, as far away as possible from other horses. Place the animal in an outbuilding or shed, where the noise of other animals will not reach him. The attendant must be very

careful and quiet about him to prevent all unnecessary excitement and increase of spasm.

No one but the doctor and attendant should see him, no loud talking, no clubbing, no spectators, can't lay too much stress on this. It may be good policy to place animals in slings. Bear in mind that a horse with tetanus can't recover in the recumbent position.

Medicinal Treatment.—Use such drugs as have a tendency to quiet the nervous system, as belladonna, prussic acid, morphine, ether, chloral-hydrate, lobelia, gelsemium. Cannabis Indica is sometimes given, also carbolic acid. Tetanus antitoxin is also used.

Antitetanic serum and lobeline are sometimes used in traumatic tetanus.

The per cent. of mortality is less in the horse than in man.

Post-Mortem.—To the close observer there is congestion of the neurilemma of the nerve leading from the wound; the vessels of the spinal cord and brain are congested; usually there is an effusion in the arachnoid space. Bacteriologists say they find the germ in the nerve filaments and sometimes in the spinal cord.

Theory of Transfusion or Inoculation.—Serum of a recovered case of lockjaw will sometimes cure a case in its acute stage. This must be administered in doses of from four to sixteen ounces, either in the jugular or peritoneal cavity. The blood is drawn and let coagulate, the serum is drawn off, then warm that and inject into the peritoneal cavity.

In summing up the foregoing: *First*, cleanse the wound thoroughly and cauterize; *second*, place animal in dark box stall, plenty of ventilation, good hygienic treatment and practise quietness. Place animal in slings in the early part of the disease, so he becomes accustomed to the same; *third*, administer nerve sedatives. You may give tetanus antitoxin occasionally. Don't try to do too much. Dark box stall, animals in slings, quietness, with plenty of fresh water and feed on hand and you may have the very best results.

PROPOSED ELIMINATION FROM THE UNITED STATES PHARMACOPOEIA.

By T. B. ROGERS, D.V.S., WOODBURY, N. J.

It may be of interest to veterinarians to know that considerable pressure is being brought upon the Committee of Revision of the Pharmacopoeia, to the end that they remove useless, inert remedies from its pages. To this proposition we must all give unqualified assent. But who shall say what drug is useless or inert?

The veterinarian would certainly regret to see *Grindelia*, *Guaiacum*, *Phytolacca*, *Quassia*, *Uva Ursi*, *Cerium Oxalate*, *Monsel's Solution of Iron*, *Donovan's Solution of Arsenic*, *Nitrate of Pilocarpine*, *Basham's Iron Mixture*, *Brown's Mixture* removed from the official list; but these are but a few of a list of more than 200 drugs and their preparations that one physician would cut out.

What would be left of the Pharmacopoeia after the entire medical profession of the United States "had had a lick at it" may be left to the imagination, possibly the cover; still there would be no use for even a cover.

The tendency in certain quarters to restrict our *Materia Medica* is to be regretted. Cocksurenness is nowhere more out of place than in medicine.

To infer that the action of a drug as demonstrated upon an animal of experiment, under the influence of one or more potent drugs, will be duplicated when given to an ailing man or animal is eminently unsafe. It is much to be regretted that we cannot practice exclusive physiologic therapeutics with safety. The work of the laboratory is essential; it furnishes short cuts to our knowledge of the action of drugs; it gives us standardized preparations of value, but it leaves much unexplained. The actions of

Colchicum, of Quinia, of Ipecac, of Calomel have not been explained in the laboratory, but worked out clinically with fear and trembling by many generations of observant practitioners.

It would be an undoubted gain if we could adapt the standardized and physiologically tested remedy to the patient's needs with mathematical accuracy, but unfortunately we cannot do so, and until we succeed in eliminating errors of observation on the part of the practitioner, and the personal equation of the patient, there is no prospect of our so doing. In other words, regret it as we may, we must still practice medicine empirically.

It is therefore evident that efforts to limit our *Materia Medica* must be looked upon with distrust, until the eliminators have very much more than their personal opinions to back up their intentions.

In taking leave of this matter we would suggest that at least one veterinarian be added to the Revision Committee, or that we get together and issue a *Veterinary Pharmacopoeia*.

THE STORY IN A NUTSHELL.—A certain storekeeper in a western town was importuned to buy a motor delivery wagon, but, strange to say, he "had taken the precaution of comparing the" so-called "two methods," real horse power and theoretical horse power, and did not fall for the truck agents' "startling arguments."

That same day a customer of the store, with a house free of all incumbrances, came to the owner of the village emporium and borrowed \$1,500 at 6 per cent. per annum; of course mortgaging his house to the merchant, who could afford neither a pleasure nor a business car.

The borrower of the \$1,500 within a few days was riding about with his family in a new automobile. Within three months the owner of the car was carrying a charge account at the store where he formerly paid cash; his purchases had dwindled monthly, and it was apparent that he was laying by no sinking fund to take care of the mortgage. "Ich ga bibble," murmurs the storekeeper as his customer calls daily in his car, which is reducing the cost of living.—(*Nat'l Ass'n Allied Horse Interests*).

REPORTS OF CASES.

ARRESTED DEVELOPMENT OF A TOOTH FANG IN A BITCH DUE TO AN INJURY.*

By W. M. PENDERGAST, V.S., Syracuse, N. Y.

History—Patient, an Irish setter, was brought to the hospital suffering from a fistula of the left superior maxillary region. This bitch was about three years old. When she was about three months old she was bitten by another dog in the left superior maxillary region. The wound did not heal and continued to discharge pus up to the time when she was received at the hospital.

Treatment—The wound was thoroughly cauterized several times and dressed daily with tincture of iodine and chinosol solution, but did not show any improvement. Finally one day, after four or five weeks' treatment, we noticed that the large tooth fang on the left side was missing. This suggested to us that possibly the tooth had been broken off and that the root was diseased.

Decided to operate, and the bitch was placed under anesthesia. An incision was made down to the bone at the afflicted part. Using a small probe, a fistula was discovered running inward and forward, and the probe seemed to strike against a solid object. Removed a piece of bone about one-half inch square and discovered the missing tooth fang firmly imbedded in the bone. The fang was just about natural size and showed signs of necrosis. It was about three-fourths of an inch long. The surrounding bone was cut away and the fang removed. The bone surrounding the fang showed considerable necrosis, and after removing as much of it as possible the wound was dressed with tincture of iodine.

In a few days the wound began to improve and the discharge grew less. The wound was dressed daily with tincture of iodine. The wound had to be scraped two or three times and patient was discharged about three weeks after the operation. I talked with the owner about six months later and he said that the wound had entirely healed.

* Presented to the Central New York Veterinary Medical Association at Syracuse, November, 1913.

INVAGINATION OF THE SMALL INTESTINE IN A DOG.

BY THE SAME.

History—Patient, a large St. Bernard dog, was brought to the office on July 30. This dog had been in the habit of eating out of garbage pails. On July 30 the dog became sick and the owner gave him a strong purgative and emetic. He said the purgative and emetic worked pretty severely on the dog.

Symptoms—On the 29th there was no action from the bowels but animal continued to vomit. When we received him on the 30th he was still vomiting and could not retain any medicine. The animal would lie on its stomach and showed great depression. He did not seem to show any pain at this time. The owner had the dog taken home that night and I was called to see him the following day. He appeared about the same, only weaker, and still continued to vomit. I told the owner there was no hope for him. The dog died that night. The owner said he suffered considerably towards the end.

Post mortem—About a foot of the small intestine was invaginated, and it had the appearance of blood sausage. It required considerable traction to reduce the invagination, owing to the gangrenous condition of the parts.

Conclusion—This invagination was probably caused by the strong emetic and purgative which the owner administered. This is the first case of invagination I have seen in a dog, but I think we would see more of them if we performed more post mortems.

GASTRIC TYMPANY IN A HORSE.

By T. B. HARRIES, V.S., Calgary, Canada.

I was called one day to see a horse which on a cursory examination presented the following symptoms: Horse in acute pain, abdomen greatly distended, eructations of gas from stomach. I did not have my stomach tube with me, so gave, with dose-syringe, drench composed of salicylic acid, spts. ammon. aromatic and aqua. As soon as I had given the drench, the horse plunged forward with his mouth wide open, and appeared to be trying to vomit, but no ingesta was returned. After that he stood quietly with his head hanging down, pulse was imperceptible, and the extremities became quite cold. I thought that a rupture had occurred and that death would ensue, but continued

giving him stimulants. The tympany gradually subsided and the horse was working again in a few days.

DYSTOKIA IN COW—PARAPLEGIA.

BY THE SAME.

On another occasion I was called out to the country to attend to a cow which could not deliver her calf. The history was that she had been in labor several hours. I found the cow lying down, full length, and in a comatose condition. I delivered the calf, which was dead, without much difficulty. Then gave the cow a hypo. of strychnine. Left a few doses of stimulants, with instructions that it be given to her if she seemed able to swallow. I asked the owner to let me know, the next morning, how she was. I expected to hear that she was dead. I went out again next day to see her at the owner's request. I found her looking a good deal better, but still unable to get up, so I pumped her udder full of (sterilized) air, gave her another hypo. of strychnine, and left a few doses of tinct. nux to be given to her. I heard later from the owner that she got up two hours after I left and made an uneventful recovery.

DIVERTICULUM OF THE RECTUM OF PSEUDO-PERINEAL HERNIA.

By CHARLES H. BEERE, M.D.C., Waterbury, Conn.

In writing this I wish to present a case that I could not find a good description of in any of the works that I have at hand.

History—Boston bulldog, age nine years, fat and always around the house, suffered from chronic constipation. By constant straining caused a dilatation of the rectum or diverticulum about one and one-half inches from the anus. It was impossible for the animal to pass fæces.

Operation—Circular incision immediately inside of the anus, pulling out of the dilated portion of the rectum, excising it and sewing the intestine to the anus with twenty-day chromatinized catgut sutures, using round needles.

With careful preparation of the dog before and after the operation this method will be found very satisfactory in this condition.

RUPTURE OF STOMACH IN HORSE CAUSED BY BLOCKING THE OUTLET OF INGESTA IN DE- TERMINING INGESTION.*

By W. L. CLARK, D.V.M., Seneca Falls, N. Y.

Patient was a large gray gelding, weight about 1,300 and in good condition. Client stated that the animal had not been ill, to his knowledge, in over a year. The animal had been fed green corn fodder the night before, and in the morning owner found the horse vomiting. Was called, but before reaching the place the horse had died and the owner wanted a post mortem.

This is what I found: The seat of the rupture was on the "great curvature" and extended nearly the whole length. The lacerations were most extensive in the outer coats and the "mucosa." The edges of the wound were more or less shredded and of a dark violet color from blood extravasation and clots. Some of the ingesta was diffused through the abdominal cavity between the convolutions of the intestines. The pyloric end of the stomach was filled with "bots," as well as about two feet of the duodenum and were so packed in same that nothing could pass.

A PECULIAR CASE OF OBSTETRICS IN COW.

By SAME.

Was called to see large Durham cow with labor pains, so prepared, as you all know, to deliver those parts of the foetus which present themselves at the pelvic inlet.

As it is written, "Seeing is believing, but feeling is the naked truth," so I had the pleasure of feeling and found a very interesting case of "*Schistocormus reflexus*." On entering the pelvic cavity, I found four feet presenting with head, and also some of the viscera of the calf. Taking both front legs off at the knee I delivered calf, and to my astonishment found calf to have only one posterior limb, and where the second posterior limb should have been, there was a front limb perfectly formed; and the posterior portion of his body turned wrong side out.

After antiseptically treating the uterus, I made an examination, and found a sac containing thirty-two hair balls, ranging in size from a walnut to a baseball.

Here is a question I would like to ask: Were these hair balls a piece of the ectoderm of another foetus or of the same foetus?

* Presented to the Central New York Veterinary Medical Association at Syracuse, November, 1913.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

INTUSSUSCEPTION OF THE COECUM IN A HORSE [*Capt. S. Black, A.V.C.*].—Seven-year-old gelding had colic, which, mild at first, gradually increased so that the horse became very violent, plunging and striking with his forefeet. Linseed oil, oil of turpentine and nitrous ether were given and also three repeated doses of chloral hydrate. After an illness of some seventeen hours the animal died. At the post mortem, intussusception of the coecum and a rupture of this organ, about two inches long, close to the ileo-coecal valve were found. The coecum had passed into the lumen of the double colon, being turned completely inside out like the finger of a glove. The coecum was strangulated and of a deep red color. The walls were fully an inch in thickness, due to a yellowish-red infiltration of the connective tissue. The small intestine showed enteritis and in its walls were embedded numerous sclerostomes, which the author thinks were the indirect cause of the trouble, having set up an inflammation which caused abnormal peristalsis, resulting in the coecal intussusception.—(*Vet. Rec.*)

SOME INTERESTING CASES [*Wm. Hepburn, F.R.C.V.S.*].—Under this heading the following were presented at one of the English societies:

1. *Chondroids of the Guttural Pouch.* After an attack of influenza, a gelding had a chronic nasal discharge, which had remained rebellious to all treatment. He had pain and swelling on left parotid region, occasional cough and discharge from both nostrils. After some time the discharge has disappeared, but as the animal was kept under observation, loud breathing was noticed, with also muco-purulent matter thrown from the left nostril. Exploring the guttural pouch with a fine needle, hard concretions were detected. A sharp seton needle was then introduced to penetrate through the membrane and when the finger was introduced and the entrance enlarged, a quantity of chondroids, amounting to about 30 oz., were removed. Daily irriga-

tions of antiseptics and astringents brought about a complete recovery in a short time.—(*Vet. Record and News.*)

2. TUBERCULAR LARYNGEAL TUMOR IN THE HORSE [*By the Same*].—Mare had been ailing for two months and treated for sore throat. Between the parotid glands a mass was felt. Breathing was stertorous. Chest revealed nothing wrong. Prepared for an operation, tracheotomy was about to be performed to relieve difficult breathing. Exploring, a tumor-like formation was detected, dovetailed in between the parotids and adhering to the posterior walls of the guttural pouches. With careful dissection a fleshy-looking tumor was removed, which on being cut into had an appearance not unlike tuberculosis and was found such on microscopic examination. The mare was then destroyed and the post mortem revealed her lungs full of tubercular nodules, as also were the small bowels.—(*Ibid.*)

3. TUBERCULAR BRONCHIAL GLAND FROM TEN WEEKS OLD CALF [*By the Same*].—Born of an apparently healthy cow, she was, when a week old, tied up alongside a cow with pulmonary tuberculosis. When calf was a little older he showed signs of the disease. He was killed, and both lungs proved to be a mass of tubercular nodules, and the bronchial glands were much enlarged.—(*Ibid.*)

SNAKE BITE (?) [*Sydney Smith, Jr.*].—Was it or was it not? asks the writer by his interrogation point.

A cow was turned out and next morning was found lying and had great difficulty to rise; she then moved very stiffly and the left hind quarter of the udder was practically black. The other three quarters were normal. When the cow was taken home, she fell down and did not rise for some days, appearing partially paralyzed. The affected quarter had a hole about half way up the teat, as if it had been punched out and was about the diameter of the ordinary teat opening, which was in the usual place. The cow showed signs of severe systemic disturbance for some days, but eventually got better after the quarter had been injected with chinosol solution. However, the affected quarter became gangrenous, and practically the whole of the gland substance sloughed away, leaving a large cavity to fill. The other quarters never showed any alteration and gave milk as usual. The writer believes the case was one of snake bite, although nothing definite could be traced.—(*Vet. Record.*)

TREATMENT OF POLL EVIL WITHOUT OPERATION [*J. M.*].—A gelding had a bad poll evil. Head very depressed, nose almost touching the ground. The region is much swollen and several fistulas on each side are discharging bloody pus with most offensive odor. As treatment, instead of opening the fistulous tract, thorough cleaning is made with peroxide of hydrogen followed by injections of "Philacogens" of Parke, Davis & Co. After three days the discharge is reduced and the odor almost gone. The treatment was kept up with much improvement. Neglect in carrying it out was followed by slight relapse. More attention is then recommended and the treatment thoroughly applied, when after two more weeks the wounds were all healed, the horse put to work and had no relapse up to the time of writing.—(*Vet. Record.*)

CANKER OF THE FOOT AND ARSENIOUS ACID [*Lieut. J. J. Hillard, A.V.C.*].—Two Australian horses were put under that treatment.

One has a bad forefoot and was very lame—it was a chronic case, which had been twice treated with only partial success. The other had the four feet diseased.

The treatment consisted in the administration of arsenious acid in bolus with an interval of seven to fourteen days between each of the three courses the drug was given. The doses, ten in number, in each case, were given in alternate days, commencing with one gramme and gradually increasing to three. Both cases recovered and no return of the disease. The local treatment was only pressure and dry antiseptic dressing. The treatment lasted about 3½ months for each case.—(*Vet. Rec.*)

EXTENSIVE RUPTURE OF THE STOMACH [*C. Greene, M.R.C.V.S.*].—Foal six or seven months old is ailing. She stood, head hanging down, has no inclination to move, temperature 101.7° F. Pulse and respiration quite normal, no pain apparent, no nasal discharge, no sign of vomiting. Tonics and oil are prescribed. She dies suddenly after a few hours' sickness. Post mortem revealed quantity of gas escaping from the peritoneal cavity and a large quantity of ingesta covering the bowels, amounting to about four gallons. The stomach was ruptured along the great curvature to the extent of fourteen inches and almost empty. The case was unusual, taking into consideration the absence of any symptoms suggesting the stomach trouble, its extent and the amount of ingesta in the peritoneal cavity.—(*Vet. Record.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

ACUTE POLIOMYELITIS IN A MARE [*Dr. Marchand and Prof. G. Petit*].—With the collaboration this case is recorded as rarely observed in equines. It corresponds to the ascending acute paralysis of man or syndrom of Landry as it is also known.

A nine-year-old mare, in good condition, has an imperfect gait forward, motions are jerky and legs carried in abduction. The animal carried the head high and straight on a rather stiff neck. Walking, she seems to have springhalt on her four legs and has a tendency to go to the left. She turns with great difficulty and seems ready to fall. She moves as an animal which has a cap over her head and she seems feeling hesitatingly for her steps. If the right foreleg is raised, she inclines the body to the left and is ready to fall, but standing is more firm, if it is the left foreleg which is raised. Soon the walking becomes staggering. Paralysis is complete on the fourth day of the sickness. The temperature varied between 37.2° , 38.3° , 39.3° . Examination of the blood shows a marked polynucleosis. No microbes of importance, coagulation slow. After eight days of illness the mare died, and the post mortem completed by the histological examination revealed the nature of the case, viz., an acute poliomyelitis.—(*Rec. de Med. Vet.*)

LARYNGO-PHARYNGO-OESOPHAGEAL SPASMS IN HORSES [*J. N. Ries*].—Many morbid conditions are yet far from being entirely explored, says the author, and relates the following:

First Case—Three-year-old gelding had been treated for distemper, and there remained a little difficulty in the deglutition of solids and liquids, some of which are returned by the nostrils. Although the animal is properly treated, the case is not doing well and little by little the horse is emaciated and yet leaving in his manger his ration, partly chewed balls which are left as in the case of a horse with defective dentition. At times the horse takes hold of food, chews it, but when he is about to swallow it, he pulls back in his stall, has a fit of coughing and food is rejected by the mouth or the nose. With liquids it is the same. All manifestations of choking. The temperature is around 39.3° . Feces small and dry. Great functions normal. Nothing is detected about all the apparatuses. It is a case of inanition by dysphagia.

Oesophagotomy is performed and a probang is introduced

with difficulty on account of the contraction of the organ, and secured to the skin to remain in permanence. Through this, artificial feeding is carried out, so well that when three weeks later the horse having pulled the probang out, the prehension and deglutition are performed well and gradually the horse improved.

He seemed about well when, the first time he is taken out, harnessed to an empty cart, he is taken with an acute attack of suffocation, true roaring which threatens his falling. Taken in his stall, after a short time all bad symptoms disappear. After one week's rest, new return to apparent health and return of similar symptoms after a short walk, accompanied this time with a fall on the ground.

New rest of two weeks—new return of the spasm as the animal is taken out, taking place with greatest severity. The horse drops and tracheotomy has to be performed while down. Fifteen minutes after he is eating and looking in perfect health.

A month is allowed for the cicatrization of the tracheotomy wound, and after it is complete a new trial is given, followed by same result and severe spasmodic manifestations.

The horse is destroyed. No lesions could be found at the careful examination of the head and neck.

Second Case—Occurred in a three-and one-half-year-old mare which, having presented similar symptoms to the first case, had oesophagotomy performed, was fed artificially through it, and after three weeks took her food naturally and was well in a month. Sold at a good price, she never had another attack.

Third Case—Ten-year-old mare had same trouble; oesophagotomy with remaining tube brought recovery in a month.

Fourth Case—Three years filly showed similar difficulty of deglutition and other symptoms, but milder. Recovered by simple local treatment round the throat.

Fifth Case—One-year-old colt has shown intermittent roaring and an operation is demanded. Laryngeal hemiplegia is not present, however. Examination of the fauces is about to be made, a twitch is about being applied, when sudden roaring takes place and asphyxia threatens. The animal drops, breathing is stopped; free incision of the trachea and introduction of a tube saves the animal's life. An hour later the colt is eating, and breathing as usual.—(*Rec. de Med. Vet.*)

AUTO-SEROTHERAPY IN VETERINARY OPHTHALMOLOGY
[*Dr. PrunEAU, Army Veterinarian*].—This method of treatment in iritis and kerato-conjunctivitis has been recently applied in

human medicine. The writer has resorted to it in a case of periodicophthalmia and obtained excellent results. He has also employed it in conjunctivitis. His technique is as follows:

1. With an aseptic syringe of 20 c.c. draw blood from a superficial vein; transvase it at once in a wide-mouthed sterilized glass vial and cork it hermetically. Place the glass in a cool place.

2. Twelve hours after getting the blood, a sufficient quantity of serum is formed to allow immediate use, if the case is pressing, but it is better to wait twenty-four hours.

When it is to be used, take with an aseptic hypodermic syringe 3 to 4 c.c. of serum. Close the glass immediately to keep its contents for three or four days in a cool place.

3. Anesthesia the eye with 5 or 6 drops of sterilized cocaine solution at 4 p./ and wash it with tepid sterile physiologic serum.

This step is carried out standing or the animal cast according to its condition and the anesthesia.

4. Raise the upper eyelid and introduce the needle of the syringe under the conjunctiva of the bulb, as far as possible from the sclero-corneal limb. Push the fluid slowly in. A small œdema is formed and resorbed in less than twelve hours.

5. Draw the needle quickly and wash the eye with physiologic serum.

A second injection can be renewed twenty-four hours after.—(*Rec. de Med. Vet.*)

UTERINE CYST IN A COW [*M. M. Grimal.*].—This cow has aborted, but the membranes have not been expelled and the writer is called. On entering the vagina to examine the condition of the parts, a fluctuating tumor is detected on the left wall of that cavity. Of little importance, it does no interfere with the process of separating the colytisans. But as the hand is carried further in, it comes in contact with a large mass which occupies the centre of the vagina. It is pushed back in the uterus and at that moment a large quantity of foetal fluids escaped. In the right uterine horn the big mass is found, elongated, flattened from one side to the other, as big as a large melon, about 40 centimetres long, fluctuating and attached to the uterine wall by a thick peduncle. It is a large cyst whose ablation was carried out with the ecrasuer, after being emptied of its contents, a citrine liquid. The small cyst of the vagina was simply punctured. There was no return nor bad sequelæ.—(*Revue Veter.*)

ELECTRARGOL IN TETANUS [*Major Vehu, Army Veterinarian*].—When one of his horses is out of sorts, the owner of the one which is the subject in question lets him rest and purges him. It generally works well, but in this case, after the usual rest and purge, he stood with all the symptoms of a marked case of tetanus. An intravenous injection of two doses of serum and chloral rectal injections are followed by violent crisis. An intramuscular injection in the pectoral muscles of 5 c.c. of electrargol is followed by noted relaxation. The injections are continued until six are given, when the animal is in full convalescence and treatment stopped. Too early, as two days later there is severe relapse. It required nine more injections of electrargol to obtain a permanent recovery. It is evident that electrargol is an agent of choice, says the writer, which would have given more efficacious results if it had been given intravenously, or, better yet, by the intra-rachidian way.—(*Rev. Gen. de Med. Vet.*)

CANINE HEMOPOIETIC SERUM WITH HEMORRHAGIC ENTERITIS IN A LIONESS [*C. Roelland*].—Bought a few months previously, she has been in good health for some time, when she ate with less appetite and in three days there is complete refusal of food. Her feces are liquid and yellowish gray in color and with repulsive odor. Belladone, opium and Bismuth gave but little relief, but the day following she passes blood in small red clots. Mustard on the abdomen is added to the treatment. But the bloody diarrhœa continues. There is extreme weakness, loss of flesh is great. The animal is indifferent to the presence of a live pigeon placed in her cage which perches on her chest. Fatal ending is expected. Fifty c.c. of canine serum and 45 centigrammes of sulphate of hordeine are injected subcutaneously, back of the shoulder. The next day the diarrhœa has stopped; there has been no evacuation of blood. The animal is better. Forty c.c. are again administered, followed by 20 later. Then the improvement is marked and the general condition improves; the lioness growls. With gradually increasing rations of new milk, recovery is complete in a few days.—(*Rev. de Pathol. Compare.*)

PYELONEPHRITIS AND CYSTITIS BY GASTRIC FOREIGN BODY IN A COW [*Prof. Douville*].—A cow three years old was sent to the writer, said to be suffering with vesical tumor. Her general appearance is rather satisfactory and she is put under observation. She is tuberculined with negative result. While she is watched, it is noticed that when having lain down she is made to get up, or when the thermometer is introduced in the rectum,

she stretches up as to urinate and expel spasmodically by small jerks about a glassful of urine, yellow, cloudy, muco-glairy and thready. It contains no sugar, no albumin. Left in a glass tube, it gives a deposit containing pus, some hematies and various species of microbes. By vaginal exploration, the miatus is found red, bladder twice as big as normal, and hard. Rectal examination is negative. Original diagnosis is confirmed; vesical tumor complicated with cystitis. After being kept some time the cow is killed and presented the following lesions: Rumen intimately united to the left kidney by fibrous band, 3 centimetres long and about the size of a 2-franc piece in diameter. In its centre is a small canal containing pus. Left kidney is twice its normal size, and on a longitudinal section shows five purulent cysts, two of which communicate with the pelvis. Right kidney is normal. Bladder hypertrophied and, as its mucous membrane shows, the lesions of chronic cystitis complicated with abscess of the vesical wall.

The foreign body, cause of the lesions, could not be found, but it is very likely that it was a sharp or pointed object of very small dimensions, which from the rumen had found its way into the left kidney, through the ureters and the bladder, where it promoted the various suppurative lesions.—(*Rev. Gen. de Med. Vet.*)

ABDOMINAL EVENTRATION [*Major Ducher, Army Veterinarian*].—Thirteen-year-old officer's horse is knocked down and hurt by a runaway tram. One of the shafts penetrates immediately back of the last left rib, towards its inferior border, and enters the abdomen. A mass of intestines bulges out, fortunately protected by a thick mesentery which covers it. The whole forms a tumor as big as a man's head, greatly congested. The horse manifests only slight colics. After careful washing with warm physiologic water, vain attempts are made to reduce the eventration and the horse has to be cast. After minute toilette, the intestines are then comparatively easily returned. Muscular ears are nipped off and suture proceeded with in three layers. A deep sero-muscular with catgut, separated stitches, a second muscular with catgut, and finally a third with silk, by stitches close together involving the skin and above two fenestrated drains. A somewhat loose bandage round the body ends the operation. Low liquid diet is prescribed for five days. The drains are taken off after six days. Cicatrization complete in short time, leaving but insignificant trace of the accident.—(*Revue Gen. de Med. Vet.*)

ROUMANIAN REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

GOITRE AND ROARING IN HORSE [*Prof. T. Poenaro*].—Eight-year-old horse has hypertrophied and fibrous thyroid glands forming tumor as big as an orange which surrounds in an incomplete circle the first tracheal rings.

Although conglomerated, the glands are yet united by the narrow isthmus that exist in youth. The thyroid tumor extends upwards towards the larynx, passing over the first tracheal ring and pressing with force against the crico-tracheal ligament and the recurrent nerve—thus narrowing the lumen of the trachea and interfering with the nerve, producing paralysis of the dilator muscles of the larynx. The horse breathes laboriously when at rest and in action severe dyspnea with whistling; roaring is manifested and threatens asphyxia if trotting is carried out for a certain time.

With this exception, the horse shows no other disturbances and seems in perfect condition; he has simply a typical hypertrophy of the thyroid, occasioning roaring, for which a resolute treatment was prescribed, applications of bi-iodide of mercury, and cauterizations. Iodide of potassium and injections of strychnia and administrations of arsenic gave no satisfactory results.—(*Arhiva Veter.*)

ANTE-DIAPHRAGMATIC OESOPHAGEAL JABOT RESEMBLING PULMONARY EMPHYSEMA IN HORSE [*Lieut. C. Th. Nicolau, Army Veter.*].—The horse *Verishor* shows colic, makes vomiting efforts, has gastro-oesophageal spasmodic contractions, with normal temperature, accelerated circulation, jerky, irregular respirations and makes attempts to vomit. After a short time these symptoms subside and the animal is quiet but placed under observation. He is seen standing quiet in his stall and only shows the alarming symptoms at the hour, when feeding time has come and the rations distributed. In fact every time the appetite of the horse is stimulated, the symptoms appear. Hungry, the animal, which neither eats nor drinks, then shows great excitement, tries to swallow what little food or liquid he has grabbed in his mouth, but is taken with violent efforts to vomit and manifests great pain. In the jugular region on the right side the oesophagus, powerfully contracting, forms a cord which appears and disappears. After many struggles, when the horse lays down, gets up, rubs his nose on the ground and so on, breaks out

in perspiration, foams at the mouth and rejects through the nose the liquid or food that he has swallowed. After a few minutes all that condition has subsided, and the animal is quiet with only its jerky respiration.

After some days these symptoms could no longer be produced at will as at first; it seems as if the animal, aware of his inability to eat or drink, had given up the attempt and then refused entirely to take or try to take anything. He died of inanition after ten days of illness.

At the autopsy there was found in the thoracic cavity, on the course of the oesophagus, immediately in front of the anterior face of the diaphragm, a hard dilatation, larger than a child's head, an intra-thoracic oesophageal jabot, weighing 2,680 grammes, and measuring 53 centimetres in its longitudinal axis. It contains a hard mass of green food, obstructing the entrance to the stomach; the oesophagus between the cardia and the jabot being, so to speak, strangulated.—(*Arhiva Veterin.*).

GENITAL ANOMALY IN A DOG [*Prof. G. Udrisky and G. M. Ilicseco*].—Six-months-old pup, when urinating, moans and cries. The abnormality of his genitals is peculiar. The sheath, instead of being narrow and elongated, has the form of a vulva. Like the sheath, the penis is situated in the lower part of the perineal region. The penis is only 2 centimeters long and has a penian bone also very reduced. The urethra ends about half the length of the organ and opens in a mucous fold, covered with erosions, causing the pains manifested by the dog when micturating. The penis remains outside the sheath. There was no indication of testicles; perhaps it was a case of true anorchidy. Placed under observation, the animal by its general disposition showed that he belonged to the male sex.—(*Ibid.*)

ANAL IMPERFORATION—ABSENCE OF RECTUM AND OF THE LAST LOOP OF THE COLON—RENAL LYMPHISIS IN A PIG [*Prof. G. Udrisky and G. M. Ilicseco*].—This little pig was thirty-five days old. Since birth he has not defecated and the cause has not been detected until he is brought to the writers. His general condition is very poor. Respiration 4, pulse 80, temperature 38.8°, mucous membranes icteric, jaws tightly closed. The operation for imperforated anus is urgent. The cross incision is made at the proper place, the tissues dissected; no extremity of the rectum is found, and the pelvic cavity is so narrow and small that scarcely a grooved directory can be introduced. Lap-

arotomy is decided for the formation of an artificial anus. The abdomen is open in the left inguinal, the peritoneal cavity entered; no rectum is found, nor is the last flexure of the colon. This organ ends by a blunt cul de sac, attached in the right lateral portion of the pelvic cavity. With great difficulty and most delicate dissection the organ is made loose and drawn towards the incision of the abdomen. The fecal matter was removed. It was liquid, thick, yellow greenish in color and had a very offensive odor. The intestine was sewed to the skin and a rubber tube placed in the opening to avoid its flattening, which would prevent the exit of feces. The animal died the day after the operation.

Post Mortem—Peritoneal cavity contained extravasated sero-bloody fluid, hemorrhagic spots on the course of the digestive canal, which was very congested, valvular endocarditis renal symphysis by union of the two kidneys, which are situated in the lumbar region and found on the median line as a semi-lunar mass with normal blood vessels and nerves and two ureters, distinct and opening asymmetrically in the bladder, one reaching it only at the neck near the origin of the urethra.—(*Archiva Veter.*)

THE MISSOURI VALLEY VETERINARY ASSOCIATION held its semi-annual meeting in Kansas City, January 27-28-29, which was exceptionally interesting and instructive. The hog cholera question, such a vital one in the Middle West, received a very great amount of time and attention. Another important subject in the West that received considerable attention, in which Secretary Mayo, of the A. V. M. A., took an active part, was forage poisoning; particularly as it relates to foodstuffs. Prof. Merillat, of Chicago, was an active factor in the surgical clinic. Details of this great meeting will be given in our next issue.

INFORMATION WANTED.—I desire the correct addresses of the following newly-elected members of the A. V. M. A., whose letters have been returned "Unclaimed" or "Unknown": Dr. George E. Potter, Pittsburgh, Pa.; Dr. Alne Edward Cameron, Regina, Sask.; Dr. John M. Courtright, Easton, Penn.; Dr. Orville E. McKim, New York City; Dr. Bruce Blair, Jersey City, N. J.

PLEASE SEE THAT YOUR ADDRESS IS CORRECT ON THE SECRETARY'S FILE. Give street address or post office box.

N. S. MAYO, *Secretary*,
4753 Ravenswood Park, Chicago, Ill.

CORRESPONDENCE.

A NEW BURSA.

FORT COLLINS, COLO., December 26, 1913.

Editor AMERICAN VETERINARY REVIEW:

DEAR SIR—It seems almost absurd at this time to try to add anything to the anatomy of the suspensory ligament of the horse, but I find a bursa, undescribed in our text-books, occurring with sufficient regularity to be worthy of record.

The bursa in question lies under the branch of the suspensory ligament that leaves the sesamoids to attach itself to the anterior extensor tendon, and the lateral ligament of the fetlock joint is deep to it. It is approximately circular, and its centre is barely a quarter of an inch below the proximal edge of the os suffraginis or first phalanx. It occurs both in fore and hind legs, and on the inside and outside of the joint. I have seen it as small as a dime, and nearly as large as a half-dollar, with the average size of a quarter. In one case of over forty examined, this bursa was absent. There is no mention of the structure in Chauveau, Strangeways, Sisson, McFadyean, or Montané and Bourdelle. No doubt it must have been observed, but dismissed as trivial. However, a penetrative wound would bring synovia, and, not knowing of the bursa, a practitioner would be forced to the diagnosis of open fetlock joint, a very serious error. I feel that no synovial structure in the legs is unimportant. According to the common-sense system of nomenclature, under which you and I, sir, learned our anatomy, this structure will naturally be called the lateral sesamoidean bursa; according to the B. N. A. and their misguided veterinary followers I suppose it will become the col-lateral sesamoidean bursa.

Yours truly,

A. W. WHITEHOUSE,
Professor of Veterinary Anatomy,
Colorado State Agricultural College.

Branksmere, Barbados, West Indies, Sept. 10, 1913.

To Editor of AMERICAN VETERINARY REVIEW:

DEAR SIR.—As the following clipping from Barbados *Advocate* of this date may be interesting to some of the readers of the REVIEW, I am sending it to you for publication.

I may also add that several kids have been born here from which pure milk was taken when they were only a few weeks old.

I am yours truly,

R. A. STOUTE, D.V.S.,

Gov. Vet. Surgeon.

SOMETHING LIKE A RECORD.—Mr. J. A. Jemmott, who is a member of the local Goat Society, reports that in January last his goat, "Brownie," a half-bred Toggenburg, gave him four does and a buck (these are the terms used by "Pegler's Goat Book") for Wallace, the thoroughbred imported by the Society, but now owned by Mr. H. A. Edwards. A few days ago, "Brownie" again dropped four does and a buck also for Wallace. It would be interesting to hear whether there is any local record of prolificness that beats this case.

SOME LEADING ARTICLES FOR OUR NEXT ISSUE.—The Diagnosis of Dourine by Complement Fixation (Mohler and Eichhorn); A Preliminary Report on the Value of Leucocytic Extract from a Therapeutic Standpoint (R. A. Archibald); The Present Status of the Control of Tuberculosis by Vaccination (S. H. Gilliland and C. J. Marshall); The Significance of Pus and Streptococci in Milk (F. H. Slack); Impaction of the Cecum in the Horse (A. T. Gelyard); and several others.

UNITED STATES CIVIL SERVICE EXAMINATION FOR VETERINARIAN, FEBRUARY 4, 1914.—From the register of eligibles resulting from this examination certification will be made to fill vacancies in the position of veterinary inspector in the Bureau of Animal Industry, Department of Agriculture, and vacancies in the Quartermaster Corps, at entrance salaries ranging from \$1,200 to \$1,400 per annum, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

This examination is open to all men who are citizens of the United States and who meet the requirements.

Persons who meet the requirements and desire this examination should at once apply to the United States Civil Service Commission, Washington, D. C.

BIBLIOGRAPHY.

IMPERIAL BACTERIOLOGICAL LABORATORY, MUKTESAR, INDIA.

IMPERIAL BACTERIOLOGICAL LABORATORY, MUKTESAR, INDIA. By Major J. D. E. Holmes, M.A., D.Sc., M.R.C.V.S., Imperial Bacteriologist.

A pamphlet describing the Imperial Bacteriological Laboratory at Muktesar, India, its work and products, has recently been issued by Major J. D. E. Holmes, M.A., D.Sc., M.R.C.V.S., imperial bacteriologist and director of the laboratory.

The author became associated with the institution in 1901, when he was appointed assistant bacteriologist, Dr. Lingard, under whose direction the laboratory was inaugurated, being then imperial bacteriologist. On the retirement of Dr. Lingard, in 1907, Major Holmes was appointed imperial bacteriologist.

The work is very interesting, showing, as it does, the high state of perfection attained in the equipment of the laboratory, and in the arrangement of its several divisions in such manner as to carry out the purposes intended, with the greatest degree of safety and efficiency. A particularly attractive feature is the wealth of beautiful photographic illustrations, thirty-three in number, showing, besides several of the officers, the principal buildings with surrounding landscape, and the more important laboratory rooms. The text comprises 47 pages and is divided into five chapters.

Chapter I gives a short history of the laboratory, beginning with the appointment of Dr. Lingard in 1890, when the first step was taken toward providing facilities for the investigation of the diseases of live stock in India. Dr. Lingard's duties were thus defined:

"To investigate diseases of domesticated animals in all provinces in India and to ascertain, as far as possible, by biological research, both in the laboratory and, when necessary, at the place of outbreak, the means for preventing and curing such diseases."

In 1893 the laboratory was removed to its present site at Muktesar, where it has gradually grown in size and importance until, at present, it registers a permanent staff of a score of scientists

and assistants, with numerous attendants, and has 27 chief buildings.

In addition to the regular work of the institution, a course of instruction in tropical veterinary diseases and in serum therapeutics, usually occupying about two months, is given for officers of the army and civil veterinary departments. Each month a class of about six native veterinary graduates is instructed in the methods of serum injection and in the practical application of serums and vaccines. Quarters are provided for members of the staff and for visiting students.

Muktesar is situated at the summit of a hill on the inner Himalayas, at an elevation varying from 7,500 to 7,702 feet, and is 21 miles from the railway terminus at Kathgodam.

The laboratory estate comprises 7,000 acres, about half of which is forest. The main building is two stories high, is constructed of stone and is practically fireproof. All rooms are thoroughly equipped with all necessary apparatus and provided with water, gas and electric light. The walls are lined with glazed tile and the floors laid with marble slabs. The library contains some 3,500 volumes and subscribes to 101 scientific journals.

All the work connected with serum preparation and investigation in anthrax, blackleg and glanders is carried on in their respective out-laboratories to prevent the risk of contamination. Each of these out-laboratories consists of two large rooms; one contains incubators and sterilizers, the other is equipped as a microscopic room.

There is also provided a fully equipped port-mortem house, an operating house consisting of three rooms with modern appliances and a series of barns for the accommodation of animals used in the preparation of serum. Six pastures situated one to two miles from the laboratory provide accommodation for a reserve supply of animals and for animals under observation.

A branch laboratory situated outside Bareilly Cantonment is used for the purpose of carrying on certain investigations during the winter months.

Chapter 3 is devoted to a résumé of the research work done at the laboratory since its foundation, and cites a long list of publications issued as a result.

The investigations cover a large field, including all the important tropical diseases, and deal with etiology, treatment, serum immunization and associated scientific problems.

In chapter 4 the author discusses the practical application of serums and vaccines in combating infectious diseases of live stock

in India, and points out the difficulties encountered in the suppression of epizootics, owing to the prejudices and feelings of the majority of native farmers and the vast areas where segregation and police restriction cannot be imposed.

No direct attempt at the total eradication of any enzootic infectious disease is made, the operations of the Government Veterinary Department being directed only towards the suppression of outbreaks as they occur. The Veterinary Service relies solely on the aid of serums and vaccines, and these can be used only when the owners consent, as measures of segregation and disinfection cannot be imposed without the consent of each individual owner.

Glanders, surra, lymphangitis, epizootica and dourine are the only diseases for the control of which legislative measures are in force; however, the practical demonstrations of the benefits of serum injection in outbreaks of rinderpest, during the past ten years, have caused the use of serum to be accepted without opposition in most districts of India.

Rinderpest is the most prevalent and destructive disease of live stock in India. Hemorrhagic septicemia is also very prevalent and accounts for a large loss of stock. Blackleg and anthrax are more or less confined to certain areas. Glanders is very prevalent throughout India, and mallein is in all suspected cases used for diagnostic purposes. Tuberculosis is not a common disease of live stock in India, and tuberculin is consequently not much in demand.

A successful method of curing surra in horses by means of arsenic and atoxyl has been worked out and instructions regarding the doses and methods of administration are issued from the laboratory.

Chapter 5 takes up individually the various sera and vaccines prepared at the laboratory, giving the method of preparation and the list of instructions sent out with each shipment as a guide to the method of operation and to the fixing of suitable doses. These instructions are quite complete, giving a list of instruments required, dosage under varying conditions, period of time elapsing before immunity is acquired and duration of immunity. Instructions accompanying diagnostic preparations give minute directions for the reading of reactions.

Directions for collecting and packing material for laboratory diagnosis are included in the pamphlet, as numerous specimens are received annually.

As a whole the publication is illuminating in showing the

great amount of work which has been accomplished since the foundation of the laboratory; and the officials who have been connected with the institution deserve well-merited commendation for the high position which the laboratory has attained in the investigation and treatment of diseases of domestic animals.

J. R. M.

A DESCRIPTION OF THE IMPERIAL BACTERIOLOGICAL LABORATORY, MUKTESAR:
ITS WORK AND PRODUCTS.

A DESCRIPTION OF THE IMPERIAL BACTERIOLOGICAL LABORATORY, MUKTESAR: ITS WORK AND PRODUCTS, by Major J. D. E. Holmes, M.A., D.Sc., M.R.C.V.S., Imperial Bacteriologist.

Major J. D. E. Holmes has recently issued an attractive publication giving in detail a description of the Imperial Bacteriological Laboratory, Muktesar: Its work and products. "In 1890 the first step was taken towards providing facilities for the investigations of the diseases of stock in India. Dr. Lingard was appointed as imperial bacteriologist in connection with the laboratory at the College of Science, Poona." His duties were to investigate diseases of domesticated animals in all provinces in India and to ascertain if possible the means for preventing and curing such diseases. In 1893 the laboratory was removed to Muktesar. In 1895 a part of the laboratory and quarters for the bacteriologist and his assistant were completed. It was at this laboratory, in 1896, that Prof. Koch, at the request of the Government of India, visited Muktesar and demonstrated his bile method of inoculation against rinderpest. In 1898 Dr. Lingard was, because of ill-health, forced to take a leave of absence. In 1899 the main building of the laboratory was destroyed by fire. It was promptly rebuilt. The work has continued to grow until at present there are some 27 buildings for different purposes. "A course of instruction in tropical veterinary diseases and in serum therapeutics was commenced for officers of the army and civil veterinary department. A bungalow for their accommodation was built." At present Major Holmes is the imperial bacteriologist, Mr. H. E. Cross, assistant, Dr. P. Hartley is the physiological chemist, and Mr. M. Kriebel, head European laboratory assistant.

This report shows that a small body of men are actively engaged in the effort to solve the problems connected with trop-

ical animal diseases and sanitation. In addition to the diseases peculiar to that climate, they have anthrax, black-leg, septicemia hemorrhagica, glanders and tuberculosis to contend with. They are preparing serums or vaccines for rinderpest, anthrax, hemorrhagic septicemia, black-leg and tetanus. A successful treatment for surra is reported. They also prepare mallein, tuberculin and various other serums.

It is hard for us to understand or appreciate the difficulties with which this group of men have to contend. They are to be congratulated in the advances they have made and the valuable service they are rendering to the people of that country and indirectly to the world at large.

The report contains a large number of illustrations of the buildings and laboratories now in use. V. A. M.

CLINICAL BACTERIOLOGY AND VACCINE-THERAPY.

CLINICAL BACTERIOLOGY AND VACCINE-THERAPY FOR VETERINARY SURGEONS, by William Scott, F.R.C.V.S.; over 200 pages, with 49 illustrations, including 12 plates. Chicago, Alexander Eger, 1913. Price, \$2.50 net.

Clinical Bacteriology and Vaccine-Therapy is surely an attractive title to a veterinarian of the present day. Bacteriology plays an important rôle in modern medicine; no matter whether it is applied to the practice of human or veterinary medicine, and *clinical* bacteriology, or a discussion of the application to practice, attracts the attention of the practitioner, who welcomes a work that has condensed the matter lying between the laboratory and the patient. This is especially welcome to a practitioner when the work emanates from a practitioner, and the work in question is *particularly* welcome to the veterinary practitioner, having emanated from a veterinarian. The value of bacteriology to present-day therapeutics in either branch of medicine is unquestioned, but in its application it would seem that the veterinarian has some advantages over the physician. Not that serum-therapy is any more effectual in the treatment of animals than when applied to human patients, but there is the prejudice on the part of the patient, in the first place, against having a hypodermic needle stuck into them, and secondly of receiving the material (the source of which they are more or less cognizant) into their systems; which prejudice in many instances prevents the physician from getting the full benefit of the treatment for his patient,

and in other instances disbars its application altogether by a refusal on the part of the patient to receive it.

With the veterinarian it is different; if he has the confidence of his client, the latter seldom questions him as to how he will treat the patient. Consequently serum-therapy has developed rapidly, and on broad lines in veterinary medicine. Therefore this work of Mr. Scott, which has for its primary object the making and administration of vaccines, from a veterinarian's standpoint, must be a contribution to veterinary literature that will be gratefully received by veterinarians. Its eighteen chapters deal with The Laboratory; Preparation of Culture Media; Cultivation of Bacteria; Staining Methods and Stains; Identification of Bacteria—General Principles; Glass-Work Requisites and How to Make Them; The Protective Elements of the Blood, Which Protect the Animal Body from Pathogenic Bacteria; Vaccines and Their Modes of Preparation; The Syringe; Phenomena Following Active Immunization by Vaccines; Serums and Their Mode of Preparation; Special Diseases Caused by Specific Bacteria, Which Are Suitable for Treatment by Sero-Vaccine Therapy; Bacterial Diseases Affecting the Cutaneous System; Bacterial Diseases Affecting Synovial Joints; Bacterial Diseases Affecting the Abdominal Organs; Bacterial Diseases Affecting the Circulatory System; Bacterial Diseases Affecting the Nervous System; Diseases of the Respiratory Organs; Swine Fever. In addition there are the matters treated in the appendices. Tuberculosis and swine fever are dealt with more in detail than the other matters, in which all unnecessary detail has been avoided. Neatly bound in black leather back and corners and olive green cloth, the publisher's work being executed in his usual excellent manner, the book is neat in appearance, of convenient size and altogether desirable.

A TEXT-BOOK OF HORSESHOEING.

A TEXT-BOOK OF HORSESHOEING FOR HORSESHOERS AND VETERINARIANS, by A. Lungwitz, former Member of the Royal Saxon Veterinary Commission, late Instructor in the Theory and Practice of Horseshoeing, and Director of the Shoeing School of the Royal Veterinary College in Dresden, Germany; and John W. Adams, Professor of Surgery and Obstetrics, and Lecturer on Shoeing in the Veterinary School, University of Pennsylvania; eleventh edition, with 212 pages and 229 illustrations. Philadelphia and London. J. B. Lippincott Company. Cloth, \$2 net.

The foundation of this excellent work was laid in German, in 1884, by Prof. Anton Lungwitz, at the request of the *Royal Veterinary Commission*; the inauguration in Germany at that

time of the law requiring horseshoers to be examined, having emphasized the need of a text-book on theoretical and practical horseshoeing. So that the foundation of the work was laid by no less an authority than the Director of the Shoeing School of the Royal Veterinary College in Dresden. This German work was translated in 1904 by an authority on horseshoeing in our own country, Prof. John W. Adams, A.B., V.M.D., who for nearly twenty years has lectured on horseshoeing to students at the veterinary school of the University of Pennsylvania, and to classes of horseshoers, under the auspices of the Master Horseshoers' National Protective Association of America.

Prof. Adams, being a thorough veterinary anatomist, can fully appreciate the effect of faulty shoeing (either in the preparation of the foot or of the shoe) upon the entire limb, and is likewise in a position to prescribe a form of shoe, or a form of shoeing, to overcome, in whole or in part, the effects of faulty poise or conformation. And he has followed the constant changes in street conditions, necessitating the adoption of newer methods of shoeing, so that in this new, eleventh edition, which has been revised and partly rewritten by him, to which he has added 61 new illustrations and had many redrawn, horseshoeing is brought right up to date, not only in the light of greater scientific knowledge of all subjects involved, but in the modern methods of shoeing; application of rubber pads, the Chadwick springs for expanding the hoof, and other modern appliances.

Every phase of the subject has received his careful attention, so as to bring the work down to meet requirements of the present day in America. Faulty gait, interfering, forging, cross-firing are carefully considered, as well as preparing the hoof for the shoes, making the shoes, fitting them, etc. Also choosing the shoes for saddlers and hunters, runners, trotters and pacers, heavy drafters, etc. He also has a chapter on Hoof Nurture. In short, *Adams' Revised and Rewritten Translation of Lungwitz' Text-Book of Horseshoeing* completely covers the entire subject of shoeing and caring for the horse's feet from a utility standpoint, under normal and abnormal conditions; it is at once scientific and practical, and should be in the library of every practitioner of veterinary medicine.

The publishers have executed their part of the work in a most commendable manner, the paper being of excellent quality, the illustrations stand out sharp and clear, and the type clean and distinct. Bound in dark blue cloth with white lettering, the book makes an attractive little volume.

ARMY VETERINARY DEPARTMENT.

REPORT OF SURGEON-GENERAL, U. S. ARMY, 1913.

FORT MEADE, SOUTH DAKOTA, January 4, 1913.

AMERICAN VETERINARY REVIEW, *New York City*:

DEAR SIRs—I am enclosing a copy of the report taken from the 1913 *Report of the Surgeon-General, U. S. Army*, concerning a proposed veterinary corps. To know the expressed opinion of the late surgeon-general may be of interest to the readers.

“One or more bills have been introduced in congress during the last year to increase the efficiency of the *veterinary service* in the *army*. This office has recommended that this service be organized as a corps and attached to the Medical Department in a manner similar to the Nurse Corps and Hospital Corps. This is not proposed for the aggrandizement of the Medical Department, but because it is believed to be the only way in which that service can be raised to a fitting plane of dignity and efficiency, such as it has held in European countries and in the armies of the great military nations.

“Veterinary medicine is a learned profession with a voluminous periodical and permanent literature of its own. The therapeutics and pharmacy of veterinary medicine are largely the same as for the medical service, and in Europe, where veterinary medicine has the dignity and standing of a learned profession, it has made valuable contributions to our knowledge of the causation of diseases. It is believed that it can be placed on a high standard of efficiency without long-continued application of the same agencies which have raised the Medical Corps of the army to its present high standard. This would not only conduce to the elevation and efficiency of the veterinary service, but would also be in the interest of economy, as all its supplies could be most advantageously purchased, cared for and issued through the machinery of the Medical Department.”

Yours respectfully,

ROBT. J. FOSTER,
Veterinarian, 12th U. S. Cavalry.

RECENT INVESTIGATIONS OF CONTAGIOUS PNEUMONIA OF HORSES, AND THE SALVARSAN TREATMENT OF THIS DISEASE.

By OLOF SCHWARTZKOPF, Veterinarian, Third Cavalry, Instructor, Mounted Service School, U. S. Army.

No other disease has been nearly so damaging to the mounted service of our army since the Spanish-American war, than contagious pneumonia of horses, the most severe of the group of diseases ordinarily called "shipping fever." Year after year is this disease newly introduced into our military posts by remounts purchased in the horse exchanges of our centrally located large cities, where it seems to exist in an enzootic form. Aside from the mortality rate, which ranges in different outbreaks from about 2 to 20 per cent. or more, the other loss sustained by the government is the relatively large number of horses which, although recovered from the disease proper, remain more or less unserviceable for cavalry or artillery service from various chronic infirmities resulting therefrom. These show soon after the remounts are turned into the ranks for schooling and drilling, or they are sure to be recognized during and after the first extensive practice march.

We have no statistics in our army to count the damage wrought by this disease, either in numbers of horses affected or in the money value lost by death and unsoundness. On this point we remain in blissful ignorance, but we can give some enlightenment from the annual reports of the veterinary corps of European armies, which latter likewise, up to a few years ago, suffered heavy losses. For instance, the veterinary report of the German army for the year 1911 gives the following instructive summary: Between the years 1901-1910, 31,190 horses were attacked by this disease, of which 1,304 died. The disease was most disastrous in 1906, in which year 7,581 horses (8½ per cent. of the total mounted strength) were under treatment for this disease, and of which number 283 horses died. In 1910, 2,955 horses were sick with the disease, and of this number 787 horses remained afflicted with the following after-diseases: Weak heart, 152; roaring, 148; broken wind, 106; tendonitis, 72; internal eye diseases, 70; chronic indigestion, 68; joint diseases, 56; partial paralysis, 55; laminitis, 36; purpura hæmorrhagica, 24.

A reflection on these statistical data conveys to us a world of information, because it discloses, in figures, the real damage

inflicted by this disease which, so far, we could only surmise from the experiences gained in our own army.

The above cited statistical report led abroad to immediate energetic measures for the suppression of the disease by embodying it in the Contagious Disease Acts. An entirely new line of research of the etiology of the disease was also ordered forthwith. When this had hardly progressed far enough to bring out really new facts, the announcement of the successful treatment of contagious pneumonia of horses with salvarsan fairly startled the veterinarians abroad, because it had been looked upon as the specific curative agent of human syphilis only. To-day there can be no longer any doubt that the salvarsan treatment of this disease has passed the experimental stage. We should, therefore, make ourselves acquainted with its rather intricate method of administration, as also with the new etiological facts so far brought out in recent investigations. It is well to study the latter first in the brief report given below in translation.

REPORT OF THE ROYAL INSTITUTE FOR INFECTIOUS DISEASES,
BERLIN.

"Further Investigations of Contagious Pneumonia of Horses," by Professor Dr. Gaffky and Staff Veterinarian Dr. Luehrs.

(Note of the translator: These investigations commenced in 1910, by request of the War Ministry. The institute was provided with entirely new experimental stables, and over one hundred uninfected young horses were purchased, a larger number of which have been destroyed for post-mortem examinations at different periods of the disease. These reports (Report III., September 9, 1912, and Report IV., December 15, 1912) were published in the *Zeitschrift für Veterinarkunde*, the journal of the veterinary officers of the German army. The results of the investigation are given below in translation and in extract only. For further information the journal cited should be consulted, which also contains four pages of colored plates, giving the gross pathological lesions in diseased lungs of horses, and the micro-organism supposed to represent the new causal agent of the disease.)

Gaffky and Luehrs have reached the following conclusions:

1. The transmission of the disease takes place from horse to horse. All attempts to infect laboratory animals (guinea pigs, rats, mice, skin parasites, stinging flies) have failed. Hairs or

skins of destroyed, diseased horses do not transmit the infection. Stables are only infected for hours or a few days. Horse manure does not carry the infection if brought into new stables. Infected clothing of men and watering troughs probably do so for a brief time, but no intermediate carriers have as yet been identified.

2. The stage of incubation of the disease is at least 16 days, but as a rule it ranges between 20-40 days, occasionally a few days longer.

3. The disease is neither transmissible by inoculation with blood, nor by subcutaneous injection of triturated parts of lungs from diseased horses into healthy horses. The infection is successful by the transmission of the bronchial secretion of diseased horses upon the uninjured nasal cavities or mouth of healthy horses. Occasionally this mode of infection fails, perhaps on account of unsusceptibility of certain horses.

4. The original lesions in the lungs of infected horses are found in the finest ramification of the bronchi and in the alveoli of the lungs, in which also accumulates a secretion of a glassy, transparent, later yellowish, gelatinous material. Cell proliferation into the neighboring tissue soon develops. If these lesions are near the pulmonic pleura, serous exudation into the sub-pleura takes place.

5. In the first stages of the disease, the newly inflamed herds in the lungs are free from any of those bacteria, which heretofore have been designated as the cause of the disease. Apparently they have no connection with the etiology of the disease, but constitute a secondary invasion into the original lesions of the lungs. The early bronchial secretion, still free from bacteria, is nevertheless infectious to healthy horses.

6. Not before the fourth or fifth day after the inception of the disease appear bacteria in the original lesions of the lungs, principally in the form of chained cocci. These produce larger areas of inflammation, hemorrhage infiltration and circumscribed necrosis.

7. The early bronchial secretion contains ciliated epithelial cells in great numbers. Within these cells are often found peculiar, dark particles, which are not looked upon as parasites, but rather as degenerative processes of these cells.

8. In the early secretion of the air passages are also found other epithelial cells, more or less round, with one nucleus, which appear to come from the alveoli or bronchioles. These cells contain peculiar vacuoli, in which are located corpuscles, generally of a round contour, but sometimes staff-like, and mostly six in

number. For more than two years these vacuoli and their contents resisted attempts at staining. Lately, Luehrs succeeded in staining them by Giemsa's method, in which the vacuoli appear in a bright, light-blue color containing reddish corpuscles. That these represent parasites is most probable. They are regularly present in cases of contagious pneumonia, but so far they could neither be found in healthy horses, nor in those afflicted with strangles, or in catarrhal influenza, or in septicæmia, in spite of numerous control examinations.

9. Dr. Zallos, the zoologist of this institute, has also found cells with one nucleus, in which are embedded vacuoli, containing isolated corpuscles. According to their behavior in staining, he considers them of parasitic nature. With these opinions agrees also Professor Hartman, the chief of the protozoan laboratory.

10. In the course of our experiments it has been found that triturated parts of lung-tissue from horses in the first stage of the disease, if introduced subcutaneously, confer immunity towards infection. If this unexpected result should prove to be constant by further experiments, this proceeding would confer a true antitoxic immunity, because a propagation of the parasites in the subcutaneous tissue seems quite excluded.

THE SALVARSAN TREATMENT—(*Therapeia sterilisans magna, Ehrlich*). Salvarsan took a sudden start to prominence in the treatment of human syphilis, following a previous succession of new discoveries in the etiology of this disease. It was in 1904 when Metschnikoff and Raux proved the transmissibility of syphilis to animals; in 1905 Schaudin and Hoffman discovered a parasite as the causal agent of syphilis, *Treponema pallidum*; in 1906 Wasserman evolved the serodiagnostic test (complement fixation) for the disease; and in 1907 Uhlenmuth announced the successful treatment of certain protozoan infections with atoxyl (dourine of horses, chicken spirillosis, syphilis, sleeping sickness). However, this preparation possesses a high toxicity, and can only be used with extreme caution. In the meantime Ehrlich had worked on a similar line of research, testing a series of 605 modifications, until he found a compound in 606 (salvarsan), which possessed parasitropic properties without at the same time being organotropic.

Salvarsan was first successfully tested on rabbits infected with syphilis. Hoppe tried it on dogs and shortly afterwards on human syphilitic paralytics. Schroeder used it in recent cases of syphilis and established its reputation as a specific, sterilizing agent of the human body infected with *Treponema pallidum*.

The credit of having first used salvarsan in veterinary practice is due to Staff Veterinarian Rips, of the German army. He announced in February, 1911 (*No. 7, Berlin Thierärztliche Wochenschrift*), that, suspecting the real cause of contagious pneumonia of horses to be a parasite similar to syphilis, he had treated with salvarsan several army horses, with results most astonishing to himself. For some time the skeptics had the word, but the correctness of Rips's discovery was soon proven by Corps-Veterinarian Froester, Chief of the Army Veterinary Laboratory at Berlin, and by his assistant staff-veterinarian, Dr. Reinecke, who also constructed an ingenious apparatus for the administration of salvarsan. Since three years the salvarsan treatment of contagious pneumonia has been obligatory in the German army, and has proven a boon to the horse, such only as was the Schmidt treatment of milk fever to the cow in the year 1898.

Salvarsan is chemically the dichlorhydrate of the dioxydiamidoarsenbenzol, an arsenical salt derived from atoxyl, and contains 34 per cent. of arsenic. It is normally a yellow powder, slowly soluble in water. If exposed to air, it oxidizes, becomes brown and toxic, and it is, therefore, put up in sealed glass tubes filled with nitrogen. The price of salvarsan in the United States is \$4 per dose.

Method of Application—The method employed in the treatment of contagious pneumonia of horses consists in the intravenous infusion of a blood-warm, diluted, alkaline and sterile normal salt solution of salvarsan. The therapeutic dose of salvarsan is 0.01 gm. per kilogram (lbs. 2.2) of the body weight of the horse, the largest amount to be used being 3.0 gm. The solution is prepared by adding to 500. gm. of a sterile salt solution of distilled water (0.06 per cent.), at a temperature of 113°-120° F., about 3.0 gm. of salvarsan. This mixture is shaken until solution has taken place, when 30-40 drops of a 15 per cent. solution of sodium hydroxid is added, until the solution reacts alkaline to litmus. The preparation takes time and demands laboratory practice.

The infusion is made by a special apparatus, devised at the Army Veterinary Laboratory, Berlin, and sold by H. Hauptner, Luisenstr., Berlin, and by Eimer & Amend, New York. The hairs of the middle of the left side of the neck are clipped, the skin sterilized with tincture of iodine, and the infusion made into the jugular vein while the head of the horse is slightly turned to the right. The seat of infusion should be closed with collodium.

The salvarsan infusion is generally applied only once, before

the height of the disease has been reached. If complications have set in after five or six days of duration of the disease, a second infusion of 2.0 gm. may become necessary, and three days later still another infusion of 3.0 gm., but these only in exceptional cases.

Neosalvarsan is the latest preparation of Ehrlich (year 1914), prepared by condensation of the formaldehydsulfoxylacid of sodium with salvarsan. It is a dark yellow powder, readily soluble in water, and it reacts neutral so that no addition of sodium hydroxide is needed in preparing the infusion. Neosalvarsan, 1.5 gm., is equal in therapeutic strength to 1.0 gm. of the older salvarsan. The salt solution in the prepared infusion should not be stronger than 0.3 per cent. Rips dissolves 4.0 gm. neosalvarsan in 110 gm. of a 0.3 per cent. salt solution under a heat of 25° Celsius. The price of 4.5 gm. neosalvarsan is equal to 3.0 gm. of the older salvarsan.

The Therapeutic Effects of Salvarsan—The immediate and prominent effect of the salvarsan infusion, if made early in the disease, is the fall of the notoriously high internal temperature within twenty-four hours. During the first four to eight hours after the infusion the temperature still rises somewhat higher (0.5-2.0° Celsius), and then a steady decline is observed. Irregular or retarded fall of temperature is seen if pneumonia has already set in, but in such cases the duration of the disease is greatly shortened and complications are avoided. If salvarsan is administered early enough, the development of pneumonia is prevented.

With the fall of temperature a reduction in the pulse rate of 20-30 per minute is also observed, so that the heart is quickly unburdened.

Two or three days after the infusion the general effect of salvarsan shows itself in the returning appetite and mental alertness of the horse. There is a short stage of convalescence, all symptoms of sickness disappear, no signs of debility or loss of condition are noticeable, and the various after-diseases of contagious pneumonia have been prevented. It is now known in the German army that the prompt treatment of a first case prevents an outbreak among the horses of a troop.

Immunity towards reinfection is conferred by salvarsan under a certain mode of application. It had been quite long known that horses which had slowly recovered from this disease are immune for the rest of their lives, and they had been marked "immunes" in the army. Since the introduction of the salvarsan treatment it has been found that a very early administration of salvarsan,

although it stops the disease abruptly, confers immunity for a short time only. Rips advised, therefore, to postpone the infusion until the third day after the fever has set in, in order to give the living organism of the horse time enough to produce antibodies. The natural immunity produced thereby, together with the effect of the salvarsan treatment, confer a lasting immunity from the disease. However, care must be taken not to defer the infusion until after the third day of the inception of the disease, as complications are liable to have set in, which would lengthen the course of the disease. If immunity from the disease is an important factor, as it is in large garrisons, this delayed treatment is preferable to the immediate treatment, which stops the disease in its incipency.

The prophylactic action of salvarsan has proven to be weak, and as no perceptible immunity is conferred by a prophylactic treatment, it is more practical to let the disease develop until the third day. The peculiar effect of salvarsan in contagious pneumonia is now explained by Ehrlich as due to the direct destruction of the parasites. Salvarsan belongs to a series of organic arsenics, so-called sessile arsenics, poisons which are not hurried through the body, but which remain bound to the cells for days or weeks.

Ill effects of salvarsan infusion have been reported in several instances. They consisted mostly in restlessness of the patient, colic pains, accelerated breathing, trembling, grinding with the teeth, perspiration and fever chills. These symptoms are, however, without consequence and last only about one-half hour. The appearance of these untoward symptoms is now explained as not due to salvarsan, but to faulty distilled water or to an unskillfully prepared infusion. The commercial distilled water, as well as that prepared in small army veterinary laboratories, often contains sodium chlorate and many dead bacteria, which latter act as foreign albuminoid bodies, producing a temporary poisonous effect. Unskillfully performed infusions are liable to produce abscesses on the seat of operation. There have been also reported a few cases of accidental perforation of the opposite wall of the jugular vein. Several deaths have occurred in cases in which the salvarsan infusion was still made after necrotic pneumonia had set in, as proven by post-mortem examinations. A regular result of salvarsan treatment is palyuria, which sets in twelve to twenty-four hours after the infusion. This has always been observed in the critical stage of contagious pneumonia long before the discovery of the salvarsan treatment.

Conclusions—From the above reports it can be seen that, while the true parasite of contagious pneumonia of horses has not yet been correctly identified or named, the salvarsan treatment has proven an absolute success. Therapeutics has in this disease, as in several other parasitic diseases, outdistanced pathology.

As the salvarsan treatment is neither effective in the treatment of strangles (distemper of horses), nor in catarrhal influenza (pink eye, epizootic, etc.), but only in contagious pneumonia (stable pneumonia, contagious pleuro-pneumonia of horses), we must hereafter differentiate more carefully between the two former diseases and the latter. We all know that a herd of remounts generally carries a mixed infection of these diseases, and that in the beginning the symptoms exhibited of this group of diseases are similar, because all three constitute affections of the respiratory tract. Careful clinical observation (fever charts), as well as the skillful use of physical diagnosis (auscultation and percussion), are the only safe means of correct differentiation, which is so essential for discriminate treatment and the safety of uninfected horses. Undoubtedly many horses suffering from contagious pneumonia have heretofore been treated merely for "influenza," a much abused generic term that has served as an excuse for correct diagnosis. Under the backward conditions of our army veterinary service, we have done the best we could in the treatment of these diseases, and have been trying to be up to date by the use of bacterines, vaccines, sera, both prophylactic and curative, in tablet form or in fluid form in sealed tubes, etc. While most of us will gladly admit that, along with open-air treatment, faithful nursing and proper diet, these modern preparations favorably influence the organism of the horse towards recovery from the ordinary cases of strangles and catarrhal influenza, they have certainly failed in contagious pneumonia to alter or check the progress of this disease, and the living body was left to fight out the battle towards victory or defeat with this new medication, just as it had to do so in the older treatment by drugs.

With these facts and considerations before us, we cannot but welcome the advent of salvarsan therapeutics as a boon to the horse. This treatment serves the double purpose to save the life of horses and to preserve those others, imperfectly recovered from this destructive disease, as sound and fit for the hard and very necessary work which they so willingly perform in the service of the government.

SOCIETY MEETINGS.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

Meeting was called to order in the rooms of the Board of Trade, Reading, Pa., December 17, 1913, at 11 a. m., by Dr. M. D. De Turk, president. The following members were present: Drs. G. Noack, U. S. G. Bieber, D. R. Kohler, W. G. Huyett, G. R. Fetherolf, F. H. McCarthy, M. D. De Turk, W. J. Dunkelberger, R. L. Berger, D. H. De Turk, and F. U. Fernsler. Visitors present are: Dr. C. J. Marshall, Philadelphia, state veterinarian and secretary State Live Stock Sanitary Board; Dr. D. B. Fitzpatrick, Philadelphia; Dr. E. A. Kerns, Kansas; Dr. C. R. Potteiger, Reading; Dr. G. R. H. Kauffman, Birdsboro, and Roy Stauffer, Boyertown.

The minutes of the previous meeting were read and approved. The president gave a brief address, in which he expressed himself as being in sympathy with the members being active and put forth all efforts in increasing the membership.

Under new members proposed, three propositions were presented and handed over to the Board of Trustees for their consideration.

The Board of Trustees announced they had acted favorably on the applications for membership received as follows:

Dr. C. R. Potteiger, Reading; Dr. G. R. H. Kauffman, Birdsboro, and Dr. Irwin S. Reifsnyder, Collegeville.

Upon motion, the rules were suspended, the report of the committee accepted and the secretary instructed to cast a vote collectively electing all applicants to membership. Relative to this motion President De Turk declared the three applicants elected to membership.

A motion was made and seconded to adjourn for lunch. The afternoon session was called to order at 1.30 p. m. The secretary read a number of communications, and they were adopted and filed.

Reports of delegates to other associations.

Dr. Kohler and Noack reported briefly, while Drs. Marshall

and Fitzpatrick also reported upon the progressiveness of the Keystone Veterinary Medical Association.

The treasurer's report was now received and accepted.

Dr. C. J. Marshall, the newly elected president of the American Veterinary Medical Association, being called upon by the chair, gave an interesting address.

He referred to recent legislation, which modified some of the meat and milk inspection laws, mentioning also that the Act of March 25, 1903, known as the Butchers' Indemnity Act, has been repealed. Two bills relating principally to milk and meat inspection were defeated, but one which proves to be of general interest was passed.

He says, the handling of interstate cattle was not satisfactory to the board under the old law; that many drovers, in some manner, managed to transfer shipments of cattle without having them tested. Upon modifying this law, all foreign cattle intended for shipment into Pennsylvania should be inspected and tested before being brought into the state, otherwise they may be brought in only under supervision of a member, officer or agent of the board, after due notice of such shipment, has been given. When cattle have been brought in under the latter clause, they are inspected and tested by duly appointed agents of the board at the expense of the state; thus the permit system, formerly in vogue, allowing cattle to be brought in under quarantine to be tested at destination, has been discontinued.

In reply to questions from members, Dr. Marshall said, the testing of interstate cattle and the compensation received for such work by the local veterinarian was in many instances a matter for consideration; the dealer usually secured the cheapest veterinarian, regardless of competency, and that three-fourths of the practitioners would not do the work at such compensation, hence at present, if cattle are brought into the state, they are looked after by authorized men of the board, which step also proves more economical to the state.

Again, if native cattle are tested prior to the day of sale, the dealer will be unable to secure indemnity for such cattle, should some react, but the owner from whom the dealer bought can secure some, provided he signs the contract of the board and lives up to its obligations.

Dr. Fitzpatrick enlivened the association with his remarks, relating his varied experiences with the use of mallein and tuberculin.

All the members present took a keen interest in these discus-

sions. A member declared that all left-over mallein or tuberculin, after a test had been made, should either be returned immediately to the office of the board or destroyed.

Dr. Marshall replied that the strength of retest tuberculin was about five times the strength of the regular tuberculin, and that advanced cases of tuberculosis may be given three or four times the ordinary dose in testing cattle.

An invitation was extended to this association to participate in the European tour, under the auspices of the American Veterinary Medical Association and directed by Dr. Adolph Eichhorn next summer, as a preliminary to the tenth international veterinary congress, which will be held in London in August. Tourists leaving Saturday, June 13, and returning on August 23, 1914.

ESSAYS AND PAPERS.

Dr. A. R. Potteiger being absent, the next essayist, Dr. R. L. Berger, was called upon to read his paper on "Tetanus." This was a very practical paper, he having related his experience with the serum treatment, having had good results. Much general discussion took place. Dr. Noack says, there are more failures in using the serum than in not using it, and, besides, the expenses of the drug is a matter of consideration with the client. He prefers the phenol treatment, and thinks 50 per cent. of tetanus cases can be cured in this manner if administered at the proper time.

Dr. Marshall claims you can get more recoveries by leaving the patient free from all medicine, but strongly advocates the use of the anti-toxin as a preventive in every instance of operation or other wounds where the tetanus germ may gain exit.

Dr. Fitzpatrick proposed a new remedy for the treatment of tetanus in *iodokvin*, a preparation of iodine, and suggested the members give it a fair trial in their cases. A member announced that all tetanic wounds should be thoroughly cleansed and then rendered aseptic by the use of tr. iodine.

Dr. Fetherolf now presented his paper, namely, "The Agglutination and Complement Fixation Test for the Diagnosis of Glanders." The explanation was made with carefully prepared charts, illustrating every process of laboratory work in conducting the test, which proved very instructive to the audience. Much discussion followed. This test was declared the best diagnosis for glanders, and does not fail in one out of a thousand cases.

A motion was made and seconded that a vote of thanks be tendered Drs. Marshall, Fitzpatrick and Kerns for their presence and assistance in making this session a good one. Motion made and seconded to adjourn.

Next meeting June 17, 1914, at Reading, Pa.

W. G. HUYETT, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

November Meeting.

The regular monthly meeting of the V. M. A. of New York City was called to order in the lecture room of the New York American Veterinary College, Wednesday evening, November 5, 1913, at 8.30 o'clock, Dr. McKinney presiding.

The minutes of the October meeting were read and approved.

Dr. John A. McLaughlin read an interesting paper entitled "The Tissue Medicine." This paper advanced some new ideas in physiology which were rather startling to most of the members and visitors present.

Dr. Duncan (M.D.), who was present, said that this article had started him thinking, and he hoped to profit by having heard it.

Dr. J. F. DeVine, of Goshen, said that Dr. McLaughlin's paper has shown a great deal of thought and study, and he was gratified to have heard it read.

It was suggested that a committee be appointed to study and discuss this paper at a future meeting. Acting on this suggestion, Dr. McKinney appointed Drs. Gill, Coates and Blair.

Dr. Gill suggested that physiologists of prominence, such as Drs. Carrel and Lusk, should be consulted.

After some further discussion it was decided to defer further talk on this subject until the committee appointed could report at a future meeting.

Dr. Brotheridge asked for information regarding cocaine and the refusal of druggists to fill prescriptions containing this drug, issued by veterinarians.

Dr. Griessman read an opinion of the attorney general relative to this drug which stated that physicians only are allowed to write prescriptions for the same. Veterinarians and dentists are allowed to handle cocaine in the original package only.

Some discussion as to the advisability of having a specific and definite agreement with counsel for the prosecuting committee was then brought up. Dr. Smith stated that the committee had an agreement with its present counsel to render services for fifty dollars for three months.

No further business appearing, the meeting adjourned.

R. S. MACKELLAR, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

(December Meeting.)

The regular monthly meeting of this association was called to order by President McKinney in the lecture room of the New York-American Veterinary College, December 31, at 8.45 p. m.

The minutes of the November meeting were read and approved.

The annual report of the Prosecuting Committee was read and, on motion, was ordered received and spread in full on the minutes. It follows:

December 3d, 1913.

Mr. President and Fellow Members.—Herewith I beg, on behalf of the Prosecuting Committee to present a brief report of the work done during the current year.

Upon investigation of the conditions which affect the practice of veterinary medicine in New York State your Committee found the following classes of men competing with the regularly licensed veterinarians.

1. Those who attended the prescribed course of study and received a diploma, but never passed the necessary State Board examination for a license.
2. Those who took a more or less complete course in a veterinary college, but did not receive a diploma nor a license.
3. Foreign graduates who never took the State Board examination.
4. Veterinarians from neighboring States who never passed the State Board examination and are therefore unlicensed here.
5. Undergraduates who practice under the protection of a licensed veterinarian.
6. A large class of men who have had little or no training at all, like dog fanciers, horse shoers, grooms and the advertising patent medicine faker. The investigation by your Committee disclosed the fact that owing to the large number of these illegal and often ignorant practitioners, much harm is being done to the animals treated, and, furthermore, that the public is endangered by the unchecked spread of preventable contagious disease.

Your Committee also is of the opinion that the educated, trained and skillful licensed veterinarian should be protected in his calling from the unfair competition of these quacks, who necessarily bring the whole profession into disrepute.

In view of this, your Committee put forth their best efforts to combat the evil as far as their limited finances would permit.

Something like 15 meetings were held and about 39 appearances in Court made. In one case your Committee withdrew the complaint because after arrest the defendant made a plea for time in order to pass the examination.

Several convictions were obtained and fines of \$25 to \$50 imposed. Others qualified and complaints were withdrawn; and in still others, sentences were postponed for one reason or another.

It will be remembered that conviction is difficult because these offenders usually obtained learned counsel to defend them, and they are often the object of mistaken sympathy and occasionally they bring to bear in their favor the weight of political influence.

Furthermore your Committee has at the present time under investigation the cases of 53 supposed illegal practitioners.

The average cost of prosecuting such a case is \$29.50.

Upon instalment of your Committee the sum of \$243.95 was recived from the Committee of 1912. The expenditures were as follows:

The sum of \$206 was paid out for counsel fees, searchers in the County clerk's office, photographs for court exhibits, printing, postage and sundries. The itemized account of these expenditures are fied with the treasurer. Balance on hand, \$37.95.

From the above it will be apparent that the work thus begun will be greatly impeded unless the necessary funds can be put at the disposal of your committee to go on. The task the Committee have set themselves is to rid the profession of veterinary medicine in the City and State of New York of the horde of illegal practitioners, which are like a canker gnawing at its vitals.

In order to obtain funds for a similar purpose other organizations have hit upon various plans.

Some have raised money by a per capita assessment of its members. This your committee does not advocate.

Some, like the County Medical Society, have had a law passed which gives them all cash fines obtained from convicted offenders by process of law. Of this more at some future time.

The thanks of the Prosecuting Committee are due to our esteemed President, Dr. W. J. McKinney, also to the officers and members of the society for their loyal support.

Respectfully submitted,

DR. CHAS. JAIMESON, *Chairman*,
DR. MAFFITT SMITH,
DR. LOUIS GRIESSMAN.

Next in order the discussion of Dr. J. A. McLaughlin's paper, read at the last meeting, was taken up.

Dr. R. W. Ellis said that Dr. Thos. B. Kenny (M.D.) had kindly consented to review this paper and had prepared a criticism on the same.

Dr. Kenny was then introduced and read his analysis of Dr. McLaughlin's paper, "The Tissue Medicine."

Both Dr. McLaughlin's paper and the analysis of the same by Dr. Kenny have been published in the AMERICAN VETERINARY REVIEW, so it is needless to give detail in these minutes.

At the conclusion of Dr. Kenny's analysis, Dr. McLaughlin

expressed himself as highly gratified and well repaid for having written his paper.

Dr. A. Slawson, of New York City, then read an interesting paper entitled, "Lympho-Sarcoma in the Dog," and exhibited specimen of the same in which the members and visitors were much interested.

Drs. Kenny and Slawson were tendered a unanimous vote of thanks for their contributions to the program of the evening.

The Secretary-Treasurer then read his annual report. The auditing committee having examined the financial statement, this report, on motion, was ordered received. (A balance of \$60.65 was reported in the treasury). Nine regular meetings had been held during the year. Interesting papers have been read and discussed, and pathological specimens exhibited. The total membership is sixty-one. Six new members were admitted during the year.

This being the annual meeting the next order of business was the election of officers for the ensuing year.

The election resulted as follows: Dr. W. J. McKinney, re-elected President; Dr. P. Burns, Vice-President; Dr. R. S. MacKellar, Secretary and Treasurer

Dr. T. E. Smith and Dr. Chas. V. Noback, having made regular application for membership and having been duly approved by the Board of Censors, were unanimously elected to membership in this Association.

Dr. Clayton moved that a committee be appointed to revise the By-Laws, and that copies of the same be printed, after approval of the revision of the same—seconded and carried.

The President appointed on this committee Drs. Ellis, Blair and MacKellar.

No further business appearing the meeting adjourned.

R. S. MACKELLAR, *Secretary*.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The twentieth annual meeting of the above association was called to order by the president, Dr. R. R. Clark, at Richmond, January 9, 1914.

Twenty-five answered the roll-call. After the usual routine business the following program was presented:

An exhaustive paper by Dr. D. E. Buckingham, of Washington, D. C., on "*Therapeutics of the Eye.*"

A paper by Dr. S. C. Neff, of Staunton, on "*Obstruction of the Diaphragmatic Flexure of the Large Colon.*"

A paper by President R. R. Clark, of Hampton, on "*Hemorrhagic Septicaemia in Cattle.*"

All of these papers were replete with valuable information. The profession in the "Old Dominion" is on the move. The members of the association are wide awake and are making their influence felt all over the State.

The officers for the next year were elected as follows: President, Dr. R. R. Clark, Hampton; First Vice-President, Dr. B. B. Glover, Lexington; Second Vice-President, Dr. H. H. Adair, Bristol; Secretary-Treasurer, Dr. Geo. C. Faville, North Emporia.

The annual banquet was held at Murphy's Hotel, and the members showed the good effects of an active out of doors life by the manner in which they attacked the good things to eat. Covers were laid for thirty. The association adjourned, to meet in Staunton, Va., on the 2d Thursday in July.

The Board of Veterinary Examiners meets at the same time and place.

GEO. C. FAVILLE,
Secretary-Treasurer.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The above association held its thirty-first annual meeting at the College of Veterinary Medicine, Ohio State University, on January 14th and 15th. The meeting was the largest in the history of the Association, 227 being in attendance. The principal items of the programme were as follows: The Inaugural Address by President Cooley; an address by Dean White of the Ohio State Veterinary College, on "The State and Veterinary Education"; a lecture by Prof. W. L. Williams, of Cornell University, on "Retention of Placenta"; a lecture by Dr. R. P. Lyman, of the Michigan Agriculture College, on "Health Disturbances Consequent Upon the Invasion of the Digestive Tract by Animal Parasites."

The dinner was held at the Ohio Union on the evening of the first day of the meeting and almost two hundred enjoyed this social feature.

The officers elected for the ensuing year are. Professor S. Sisson, President; Dr. F. F. Sheets, Vice-President; Dr. R. Hilty, Toledo, Ohio, Secretary; Dr. D. S. White, Treasurer.

REUBEN HILTY, Sec'y.

ADDRESS BY DR. A. JOLY, LIVE STOCK SANITARY COMMISSIONER.

AT A BANQUET OF THE MAINE VETERINARY MEDICAL ASSOCIATION, AT PORTLAND, JAN. 14, 1914.

Mr. President, Ladies and Gentlemen—I wish to congratulate the banquet committee upon the success of this gathering, and the happy thought of having the ladies present.

I do not believe that we could begin the year in a better manner than to have our wives and sweethearts participate and assist us in forming resolutions for the year 1914.

I am sure that the ladies feel greatly interested in our enterprises and in all the problems which confront the veterinary profession.

I suppose that you have all seen or heard of the play called "Brewster's Millions"—the task he had to get rid of a fortune in a certain length of time, in order to inherit a second fortune.

I was in about the same predicament after the legislature of 1913 had granted my office an appropriation of \$50,000 a year; but with your able assistance, Brother Veterinarians, I have succeeded in spending it all. I am left with a balance of \$132, just enough to pay for the printing of my annual report.

I must have been right when a year ago I told the committee on agriculture that \$50,000 was needed, and bear in mind that all my bills had to be scrutinized by the commissioner of agriculture and approved by the state auditor.

Nevertheless I have reverted to the state treasurer the sum of \$8,637, net proceeds received from hides and carcasses. Such amount could have been added to my appropriation if needed.

I feel that our sanitary laws have been carried out as they read; our mission has been well filled, I can assure you it will stand criticism, and our aim has been, at all times, to give everybody a square deal.

We have condemned 1,026 animals which were a menace to

public health and to the live stock industry. We have cleaned out 643 herds infected with tuberculosis. Right here in Portland the milk supply came from the most dangerous sources. From the middle of November to the first of January, in six weeks' time, 52 herds were found infected and 192 head of cattle were condemned.

But such conditions do not exist all over the state. We have some other data which is more encouraging. For instance, out of 5,572 milch cows shipped from Maine to Brighton Market and tested there, only 136 were condemned; a percentage of about $2\frac{1}{2}$ per cent. I believe that these 5,572 head of cattle came from as many different and scattered herds of the state, and the percentage is very gratifying.

Our work shall go right along, and I do not worry about spending another \$50,000 during this year, for we must have a clean milk supply; we owe it to the public.

It is not a question of how many persons out of a thousand take the disease or die from bovine infection. The fact has been established that it is communicable to man, and it is our duty, both as an association and as individuals, to use all our efforts to protect our citizens from this source of danger.

By the honest and intelligent work of its members, the standard of the veterinary profession in our state has been raised in the esteem of the public. It is up to us to bring it abreast with the practitioners of human medicine.

Neither horse jockeys nor cow jockeys should have any influence in our midst. There is only one way of testing cattle. There should be not one method when an animal is sold and another when it is purchased.

Let us be honest in our daily purpose, and without being mistaken, I can prophesy a great future and remarkable possibilities for the veterinary profession of Maine.

Inside of two years we shall have a meat inspection law all through the state. Maine is awakened and will raise beef.

The 35,000 calves which are being shipped every year to Watertown and Brighton Markets will be kept on our Maine farms, and inside of five years Maine will have its own stock-yards. Municipalities shall have their milk supply from tested herds, yearly inspected by a local official.

With our other sanitary laws in relation to the importation and exportation of live stock, there will be ample occasion for the honest and able veterinarian to prove to his community his indispensable usefulness.

RHODE ISLAND VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Rhode Island Veterinary Medical Association was held at Elks' Hall afternoon of January 15, 1914, and much interest was taken in the proceedings, as many interesting topics pertaining to the welfare of the profession were discussed, especially the present milk situation; legislative bills pertaining to improvement of same, better sanitary laws, and enforcement for meat, milk and provisions. Statistics were read from several states and cities, showing that Rhode Island was practically alone in lax laws regarding hygienic conditions, as only two veterinarians were officially employed to assist in improving sanitation, while in nearly all states and cities veterinarians are appointed on state and municipal health boards. Evidently the "Heads" of said boards are not aware of the fact that the educated veterinarian of to-day is better qualified to cope with the situation than officeholders in "Little Rhody." Several communications were read from other states, pertaining to association progress along the up-to-date methods being used in meat and milk inspection. The election of officers resulted in Dr. U. S. Richards, of Woonsocket, as president; Dr. G. L. Salisbury, Lafayette, first vice-president; Dr. E. J. Sullivan, Georgiaville, second vice-president; Dr. T. E. Robinson, Westerly, treasurer, and Dr. L. T. Dunn, Providence, secretary.

The new president made the following appointments for the ensuing year: Executive Committee, Diseases, etc.: Drs. Pollard, Robinson, Cole; Legislative Committee: Frey, Jones, Pollard, Salisbury; Finance Committee: Robinson, Sullivan, Dunn.

After adjournment, refreshments and lunch, with reports of interesting cases, concluded the meeting.

L. T. DUNN, Sec'y.

O. S. U. PROFESSOR DIES OF GLANDERS.—*Prof. Jansen Contracted Fatal Horse Disease in Laboratory Research Work.*—Columbus, January 5.—Prof. Andrew M. Jansen, of Ohio State University, infected during laboratory research work, is dead to-day of glanders, a disease common to horses. He was ill 25 days. The real cause of illness was not established until three days ago. —(*Dayton Evening World*).

NEWS AND ITEMS.

THE LOBECK CLASSIFICATION BILL FOR B. A. I. EMPLOYEES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after July first, nineteen hundred and fourteen, the Secretary of Agriculture shall classify the salaries of the veterinary inspectors, the meat inspectors, the inspectors' assistants, the stock examiners, the skilled laborers and the clerks as herein-after provided.

Sec. 2. That all veterinary inspectors within the classified service and actually employed as such in the Bureau of Animal Industry of the Department of Agriculture now established—first, that the entrance salary of said veterinary inspectors shall be \$1,400 per annum, and those who at the date of July first, nineteen hundred and fourteen, may be receiving a salary of less than \$2,400 per annum, shall thereafter, from said date, receive an annual increase of \$100 until their salaries shall amount to \$2,400 per annum; further increase in salary to be made at the discretion of the Secretary of Agriculture.

MEAT INSPECTORS' MAXIMUM, \$1,600.

Sec. 3. That all meat inspectors within the classified service and actually employed as such in the Bureau of Animal Industry of the Department of Agriculture now established—first, that the entrance salary of said meat inspectors shall be \$1,000 per annum, and those who at the date of July first, nineteen hundred and fourteen, may be receiving a salary of less than \$1,600 per annum, shall thereafter, from said date, receive an annual increase of \$100 until their salaries shall amount to \$1,600 per annum; further increase in salary to be made at the discretion of the Secretary of Agriculture.

Sec. 4. That all inspectors' assistants within the classified service and actually employed as such in the Bureau of Animal Industry of the Department of Agriculture now established—first, that the entrance salary of said inspectors' assistants shall be \$840 per annum, and those who at the date of July first, nineteen hundred and fourteen, may be receiving a salary less than \$1,600 per annum, shall thereafter, from the said date, receive an annual increase of \$100 until their salaries shall amount to \$1,600 per annum; further increase in salary to be made at the discretion of the Secretary of Agriculture.

Sec. 5. That all stock examiners within the classified service and actually employed as such in the Bureau of Animal Industry of the Department of Agriculture now established who, at the date of July first, nineteen hundred and fourteen, may be receiving a salary of less than \$1,600 per annum, shall thereafter, from said date, receive an annual increase of \$100 until their salaries shall amount to \$1,600 per annum; further increase to be made at the discretion of the Secretary of Agriculture.

Sec. 6. That all skilled laborers within the classified service and actually employed as such in the Bureau of Animal Industry in the Department of Agriculture now established who, at the date of July first, nineteen hundred and fourteen, may be receiving a salary less than \$1,200 per annum, shall thereafter, from said date, receive an annual increase of \$100 until their salaries shall amount to \$1,200 per annum; further increase in salary to be made at the discretion of the Secretary of Agriculture.

Sec. 7. That all clerks outside of the executive offices in the city of Washington, District of Columbia, within the classified service and actually employed as such in the Bureau of Animal Industry of the Department of Agriculture now established—first, that the entrance salary of said clerks shall be \$900 per annum, and those who at the date of July first, nineteen hundred and fourteen, may be receiving a salary less than \$1,500 per annum, shall thereafter, from said date, receive an annual increase of \$100 until their

salaries shall amount to \$1,500 per annum; further increase in salary to be made at the discretion of the Secretary of Agriculture.

ADDITIONAL APPROPRIATION.

Sec. 8. That there be, and is hereby, appropriated such additional sums to the \$3,000,000 annual appropriation provided for in the meat-inspection Act approved June thirtieth, nineteen hundred and six, found in the Thirty-fourth Federal Statute, page six hundred and seventy-four, as may be necessary to carry into effect the provisions of this Act, and that such additional appropriation shall be deemed an annual appropriation.

Sec. 9. That all Acts and parts of Acts, except the meat-inspection Act approved June thirtieth, nineteen hundred and six, inconsistent with this Act be, and the same are, hereby repealed.

REGULATIONS GOVERNING THE ADMISSION OF LIVESTOCK TO PENNSYLVANIA.—Horses, mules, asses, sheep, goats, pigs, dogs, cats and poultry must be free from transmissible diseases.

Bovine Animals.—Those for immediate slaughter and apparently healthy calves under six months of age, except southern cattle and those for temporary exhibition purposes, may be brought into Pennsylvania without restriction. Southern cattle for immediate slaughter and all bovine animals for temporary exhibition purposes can be admitted only on a special permit from the State Veterinarian of Pennsylvania. All other bovine animals must be accompanied by a health certificate and a tuberculin test chart. Those not accompanied by the health certificate and tuberculin test chart as required by law can be brought in under the direct supervision of a member, officer or agent of the State Livestock Sanitary Board. For the present, such supervision shall mean that where the purchaser cannot make satisfactory arrangements in another State for the health certificate and tuberculin test, he may bring them in subject to the following regulations:

"The shipper must communicate with the Harrisburg office, giving the number of cattle and stating when, where and how they are to be brought in. If they are to be shipped in, he must give the shipping station, the railroad or railroads over which they are to be shipped and the destination in Pennsylvania. He will then be notified by mail or telegram to drive or ship such animals, subject to regulations at destination. Arrangements have been made at the Union Stock Yards in Pittsburg and Lancaster for the examination and test of such stock by an agent of the State Livestock Sanitary Board. Apparently healthy steers will not be submitted to a tuberculin test, provided they are not to be kept with dairy or breeding cattle."

Bovine animals brought into the Commonwealth under conditions not set forth above may be quarantined at the expense of the owner at any point in Pennsylvania and submitted to the

physical examination and a tuberculin test by an agent of the Board.

WHO MAY MAKE THE PHYSICAL EXAMINATION AND TUBERCULIN TEST.—State Veterinarians, inspectors of the Bureau of Animal Industry, officially certified veterinarians in the State from which the cattle originate and agents of the Pennsylvania State Livestock Sanitary Board.

EVEN VETERINARIANS.—Ever vigilant in guarding the interests of our profession, Dr. Dalrymple was aroused by a discussion at a meeting of the Louisiana Pharmaceutical Association and sent the following letter to the Editor of *The Times Democrat*, New Orleans:

"In a discussion which took place at the meeting of the Louisiana Pharmaceutical Association, Dr. Asher is reported to have made the following remark: 'Even nurses and veterinarians are trying to raise the standard of their profession by introducing elevating legislation.' This is quite true with reference to the veterinary profession in Louisiana, where it has only been known as a profession less than two decades, but it is so known now throughout the entire United States and Canada, and, in the case of some of its members, on the other side of the Globe. However, I am not writing this in any spirit of criticism, as I do not believe any reflection was meant by Dr. Asher's statement. At the same time, that little adverb, 'even,' has an inferential significance tending to produce the impression on the public mind that the veterinarian is a somewhat lower order of being who is only now trying to obtain public recognition. And it is to endeavor to correct this impression that I am sending you this communication.

"In European countries the veterinary profession stands on equal footing with all of the other so-called learned professions, and the course of study is similar in length and requirements to that of other branches of medicine.

"Parenthetically it might be mentioned here that when the writer came to Louisiana some twenty-four years ago, he had passed a college course in veterinary medicine and surgery of about twice as long as that then required by the majority, at least, of the southern medical colleges to graduate practitioners of human medicine.

"Coming over to our own country the United States and Canada have some very fully equipped veterinary schools. The University of Pennsylvania has its splendid veterinary school as it has its medical institution, with a course of study running

through three years of eight or nine months each. Cornell University also has a very fine veterinary institution with a course running similar to the other university courses in point of time. Many of the State universities and colleges throughout the country have their regular veterinary schools occupying the time of a full university or college course of eight or nine months each year. In fact the private schools, of which there are but a few now, are required by the Association of American Veterinary Colleges and examining boards to extend their courses to at least three years of not less than eight months each. And, unless they do so, their graduates are not eligible to membership in the American Veterinary Medical Association, nor to civil service examinations for positions in the United States government service.

"The American Veterinary Medical Association, as an organization, is one of the most ethical in the country, and its constitution and by-laws as strict as any other society that has to deal with the subject of medicine. And, further, some of the most renowned pathologists of the day are members of the veterinary profession, a number of whom have been knighted by their sovereigns for exceptional services rendered in the cause of humanity, and in the interest of agriculture in its broadest sense.

"As stated at the beginning, this is not written in a spirit of criticism, but to checkmate, if it will, the impression that may have been left on the mind of those reading that part of Dr. Asher's discussion referred to, in relation to the veterinary profession. However, although that little word, 'even,' might, with all justice, have been omitted in connection with Dr. Asher's reference to, and praise of, if you will, the veterinary profession for what it was endeavoring to do, it is not at all surprising when one thinks of the appalling lack of correct information that prevails in some quarters with regard to the general standing of the veterinary profession in all civilized countries, notwithstanding it dates back to the days of Hammurabi, 2,100 years before the Christian era; and the more modern school, from about the middle of the eighteenth century, where the eminent French jurist, Bourgelat, established the Lyons (France) school, which was subsequently patronized by royalty, and to which students flocked from almost every civilized country of Europe. From the foregoing, therefore, it may be inferred that the veterinary profession of to-day has a standing that full entitles it to every protection and elevation that a State, or the nation, is able to afford it."

W. H. DALRYMPLE, M.R.C.V.S.,

Baton Rouge, La.

AMERICAN SURGEON'S SLIGHTING STATEMENT IN REGARD TO VETERINARIANS AROUSES RIGHTEOUS INDIGNATION OF EMINENT LONDON VETERINARIAN.—The following clipping from the London *Times* suggests the narrowness of the views of some men in regard to other callings, even though standing at the top in their own. Sir John McFadyean so valiantly defends our profession that we have reproduced it, feeling sure all our readers will enjoy reading it:

VIVISECTION AND VETERINARY SCIENCE.—*To the Editor of the Times.*—SIR: According to the report which appeared in *The Times* of Friday last, Professor Harvey Cushing, in the course of an address which he delivered on the previous day to the members of the Congress of Medicine, made the statement that, "Most veterinarians have profited not at all by the advance in general medical knowledge of the past generation," and exclaimed that it was little wonder that people preferred to have their pets, when in need of surgical care, operated upon in an experimental laboratory rather than in many of the established veterinary hospitals. I hope you will allow me to enter an indignant protest against the public affront which was thus put upon the veterinary profession. Even if it had been true that the majority of veterinary surgeons of the present day are as ignorant as Professor Cushing asserts them to be, the fact would not have furnished any argument in favor of the practice of vivisection with a view to the advancement of medical knowledge. But, Sir, the statement is grotesquely untrue, and it therefore deserves to be denounced as a wanton libel. Professor Cushing is an eminent surgeon, but the references to animal diseases which are contained in his address prove that he does not possess the knowledge which would justify him in sitting in judgment on the present state of veterinary science. With your permission, I will challenge him to bring in support of the view expressed in the sentence quoted above the opinion of any surgeon, physician, or pathologist whose name carries weight in Europe.

The suggestion that people in general prefer to have their pets operated upon by human surgeons needs no refutation. Perhaps, however, Professor Cushing only meant that that was the state of things in Baltimore. I am, etc., J. MCFADYEAN.

Royal Veterinary College.

MARRIED.—Dr. Ross Allen Greenwood, Painesville, Ohio, was married December 31, 1913, to Miss Katherine Lillis of that place. We wish the young couple all the happiness that the married state can bring them.

WISCONSIN STATE VETERINARY SOCIETY.—The report of the last meeting of this association reached us too late for publication in present issue. The next meeting will be held in Milwaukee, February 10 and 11, 1914.

TWINS—GIRL AND BOY were presented to Veterinarian Walter R. Pick, First Cavalry, U. S. A., Presidio of Monterey, California, by Mrs. Pick on January 12th. Further reason why the Army Veterinary Bill should pass.

COLORADO VETERINARY MEDICAL ASSOCIATION.—The association held its annual meeting in Denver, January 22 and 23, 1914, and enacted a most excellent program. Secretary Newsum's report will probably appear in our next issue.

KEYSTONE VETERINARY MEDICAL ASS'N's report of January meeting reached us too late for publication in present issue. Amongst the guests present were Drs. Chas. A. Cotton, of Minneapolis, and Dr. John Turner, of Washington, D. C.

THE PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION will hold its thirty-first annual meeting in Philadelphia, March 3 and 4. Secretary Reichel extends a cordial invitation in behalf of the association to veterinarians in neighboring States.

ENLISTS HIS HEARTY SUPPORT IN THE COMING YEAR.—A Michigan subscriber, in renewing, thanks us for reminding him that his subscription had expired, as he believes it the best veterinary periodical ever published and says that it has been sufficiently appreciated by him to enlist his hearty support in the coming year.

DEATH VISITS THE FAMILY OF PRESIDENT SWITZER OF THE NEW YORK STATE VETERINARY MEDICAL SOCIETY.—Within two days of each other, in the second week of January, death claimed the mother of Dr. W. B. Switzer, and the mother of Mrs. Switzer, of Oswego. The mother of Mrs. Switzer, who was Mrs. Diantha Peer Skellenger, was 85 years old, and was taken sick suddenly while visiting her son. Dr. Switzer's mother died on the same day of the month, and at the same hour as her husband, who departed this life 36 years ago. Dr. and Mrs. Switzer have the sympathy of the profession in their bereavement.

COUNTESS AN ANIMAL NURSE.—Was a cab driver and then a barber, now in a dogs' hospital. (By Marconi Transatlantic Wireless Telegraph to The New York *Times*).—Paris, December 25.—The Countess de la Gueriviere, who in 1907 appeared as the first woman cab driver in the streets of Paris, has since then twice changed her "profession."

After a brief success as a "cabby," the Countess, who at one time was very wealthy, but is now forced to earn a living, became a barber's assistant. She then opened a barber's shop on her own account, but this venture did not last long. A few months ago a third change took place and the Countess became a nurse in a Paris hospital for dogs, cats and birds.

OUR POETIC SUBSCRIBER IN GETTYSBURG AGAIN RENEWS
IN VERSE:

My subscription please renew
To AMERICAN VETERINARY REVIEW;
Enclosed my check made payable to you
You grand old AMERICAN VETERINARY REVIEW;
You are welcome to the subscription price
That is only a mere sacrifice;
Uncle Sam will bring you to my door,
So come along for the year 1914;
With a few happy hours spent in clover,
This Country Vet. will look you over.

E. D. HUDSON.

IMPORTANT TO BUYERS OF STOCK-FEEDS.—The Massachusetts Agricultural Experiment Station has just issued its Bulletin 146, Inspection of Commercial Feed Stuffs. It is the first bulletin issued under a new feeding stuffs law. The chemical analyses of about 1,000 feeding stuffs found for sale on the Massachusetts markets are shown, and in the case of mixed or compound feeding stuffs a statement of the ingredients is given.

The Bulletin also contains several pages of interesting comments on the different classes of feeding stuffs, which should be of use to every practical feeder.

The Bulletin is completed with a table of average wholesale prices of the standard feeding stuffs for each month of the year, September 1, 1912, to August 31, 1913.

The Bulletin will be sent to anyone requesting it. Address communications to

DIRECTOR, AGRICULTURAL EXPERIMENT STATION,
Amherst, Mass.

THE MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION held its seventeenth annual meeting at St. Paul, January 14th to 16th, with a most interesting program. Secretary G. Ed. Leech's report will be published in a subsequent issue.

DR. E. THOMAS DEAD.—Dr. E. Thomas, a subscriber to the REVIEW for some years, died at his home in Arlington, S. D., on January 1, 1914. A sad beginning of the New Year for his family, to whom the REVIEW tenders its sincere sympathy.

DR. MERILLAT RETURNS TO MCKILLIP VETERINARY COLLEGE.—Dr. L. A. Merillat, prominent in veterinary circles as practitioner, teacher and author of veterinary text-books, has accepted the position of professor of surgery in the McKillip Veterinary College. For the past twelve years Dr. Merillat has held the chair of surgery in the Chicago Veterinary College. Prior to that time he was connected with the McKillip Veterinary College as secretary of the institution and professor of anatomy and therapeutics, having been with that school since its inception and active in its organization. The addition of Dr. Merillat to the McKillip faculty very greatly strengthens the teaching power of the institution.

THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY held its thirtieth annual meeting in Trenton on January 8. After the business session and election of officers, luncheon was served in the dining-room of the Hotel Windsor; Mayor Donnelly of Trenton occupying a place next to President Smith at the head of the table. After luncheon the afternoon session was opened with an address from Mayor Donnelly of a very interesting character; the mayor being a man of a very fascinating personality. The papers were then presented, beginning with a most excellent one entitled "Horse Breeding in New Jersey,"* by Dr. M. A. Pierce, of Paterson. This was discussed with considerable interest. Prominent amongst the discussionists were Drs. McDonough and Rogers, of Montclair and Woodbury, respectively. Among other papers and discussions, was a talk by Dr. Wm. Herbert Lowe, of Paterson, on the tuberculosis problem. The meeting was finally closed with an instructive discussion on "Hog Cholera" by Dr. D. B. Fitzpatrick, of Philadelphia. Several visitors were also present from New York City.

* Published on page 581 of this issue.

